

MODULE HANDBOOK
Master Program in Computer Science
Department of Computer Science and Electronics
Faculty of Mathematics and Natural Sciences
Universitas Gadjah Mada

Digital Image Processing

Module name	Digital Image Processing	
Module level	Master Program	
Code	MII-6422	
Courses (if applicable)	Pattern Recognition	
Semester	Autum (Gasal)	
Contact person	Agus Harjoko, M.Sc., Ph.D.	
Lecturer	Agus Harjoko, M.Sc., Ph.D.	
Language	Bahasa Indonesia and English	
Relation to curriculum	Master program, elective, 3rd semester.	
Type of teaching, contact hours	Lectures, <= 15 students, regular: wednesdays, 1.30-4.00 pm.	
Workload	<ol style="list-style-type: none"> 1. Lectures: 3 x 50 = 150 minutes (2.5 hours) 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 75% of the lectures to sit in the exams.	
Mandatory prerequisites	<ul style="list-style-type: none"> • Computer Programming 	
Learning outcomes and their corresponding PLOs	After completing this module, a student is expected to:	
	CO	Description
	CO-1	understand and be able to explain the basic concepts and techniques in pattern recognition including detection, clustering, classification, identification and verification.
	CO-2	be able to design a solution for an pattern recognition problem
	CO-3	be able to determine the proper image preprocessing method
CO-4	be able to determine the relevant features (text, 1D, 2D) and the extraction method	
	Supported PLO	
		PLO2, PLO3
		PLO5
		PLO5
		PLO4

	CO-5	be able to determine the feature selection method to obtain Best optimal features	PLO8
	CO-6	be able to study on his own to solve pattern recognition problem.	PLO6
Content	This course provides the students with the knowledge of methods for preprocessing of text, 1D, 2D and video data; feature extraction methods, feature representation and feature matching methods (distance based, similarity based, machine learning based). Case studies will be discussed in the class.		
Study and examination requirements and forms of examination	<ul style="list-style-type: none"> • In-class exercises • Assignment 1, 2, 3, 4 • Mid-term examination • Final examination 		
Media employed	LCD, whiteboard, websites (eLisa).		
Assessments and Evaluation	CO-1: questions in midterm exam / assignments (total: 15%) CO-2: questions in midterm exam / assignments (total: 15%) CO-3: questions in midterm exam / assignments (total: 20%) CO-4: questions in final exam (total: 20%) CO-5: assignments / quizzes (total: 15%) CO-6: questions in final exam / assignments (total: 15%)		
Reading List	C. Bishop, Pattern Recognition and Machine Learning , Springer, 2006 R.C. Gonzalez dan R. Woods, <i>Digital Image Processing</i> , Addison Wesley, 2015. Website of the Digital Image Processing course, Dept. of Electrical and Computer Engineering, University of Wisconsin, USA.		