



UNIVERSITAS MATARAM

(University of Mataram)

FAKULTAS TEKNIK

(Faculty of Engineering)

PROGRAM STUDI TEKNIK INFORMATIKA

(Department of Informatics Engineering)

MODULE HANDBOOK DESCRIPTION

Pattern Recognition (P22A09)

Module designation	Pattern Recognition (PR)
Semester(s) in which the module is taught	8 / fourth year
Person responsible for the module	Prof. Dr. Eng. I Gede Pasek Suta Wijaya, S.T., M.T.
Language	Indonesian
Relation to curriculum	Electives
Teaching methods	Lectures, Discussions, Project
Workload (incl. contact hours, self-study hours)	<p>Contact Hours every week, each week of the 16 weeks/semester including Evaluation</p> <ul style="list-style-type: none"> ● 2 x 50 minutes lecturer/week ● 2 x 60 minutes class exercise/week ● Self Study hours = 120 minutes/week <p>Total workload 340 minutes/week</p>
Credit points	2 (~ 3,2 ECTS)
Required and recommended prerequisites for joining the module	Artificial Intelligence.

<p>Module objectives/intended learning outcomes</p>	<p>The main objective of PR courses is to provide students with knowledge, simulation techniques, application techniques, and analysis of a physical object/data/event in one or more categories. The learning outcomes of the Pattern Recognition course are:</p> <ol style="list-style-type: none"> 1. mastering concepts related to object/event patterns, feature extraction, and grouping techniques (clustering and classification), training techniques and machine learning testing; 2. able to calculate and apply the concept of feature extraction, clustering and classification to solve simple pattern problems; 3. able to simulate the concept of feature extraction, clustering and classification (based on machine learning) to solve real problems using existing/online datasets.
<p>Content</p>	<p>This course provides students with knowledge, design, and analysis about the pattern of object/event and how to apply it to solve certain cases. This course contains important topics:</p> <ol style="list-style-type: none"> 1. Introduction to pattern recognition 2. Data Input and Pre-processing 3. Features and Extraction Techniques 4. Dimensional Reduction using PCA and LDA 5. Clustering Techniques 6. Classification Technique 7. Classification using ANN and CNN 8. Project 9. Project outcome presentation
<p>Examination forms</p>	<p><i>Assignments, Quiz, Simulation, Project (Oral Presentation)</i></p>
<p>Study and examination requirements</p>	<p><i>Assignments 10%, Quiz 25%, Simulation 25%, Project 40%</i></p>

Reading list	<ol style="list-style-type: none">1. Bishop, C.M. (1995), Neural Network for Pattern Recognition Clarendon Press.2. Richard O. Duda, Peter E. Hart, David G. Stork (2020), Pattern Classification, John Wiley & Sons3. M. Narasimha Murty, V. Susheela Devi (2011), Pattern Recognition An Algorithmic Approach, Springer London4. Laurene Fausett, 1994, Fundamentals of Neural Networks: architectures, algorithms, and applications, Prentice Hall, USA5. https://docs.microsoft.com/en-us/learn/paths/get-started-with-artificial-intelligence-on-azure/6. https://docs.microsoft.com/en-us/learn/paths/create-no-code-predictive-models-azure-machine-learning/7. https://docs.microsoft.com/en-us/learn/paths/explore-computer-vision-microsoft-azure/
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