Data Mining

Module name	Data Mining	
Module level	Undergraduate	
Code	IF221217	
Courses (if applicable)	Data Mining	
Semester	5/6	
Lecturer	Budi Nugroho, S.Kom, M.Kom (PIC) Eva Yulia Puspaningrum, S.Kom, M.Kom	
Language	Bahasa Indonesia and English	
Relation to curriculum	Elective; 5th or 6th semester	
Type of teaching, contact hours	Lectures, < 60 students,	
Teaching Methods	case study, project-based learning, problem-based learning, research base	
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	Artificial Intelligence	
Courses description	In this course, students will learn about the concepts and models of data mining, perform data preprocessing processes, and conduct the concepts of classification and clustering. Towards the end of the course, students will engage in a case study related to data mining and solve it using various algorithms and available tools.	
Learning outcomes and their corresponding PLOs	After completing this module, a student is expected to:	
	CO1 Students are able to explain the fundamental concepts of data mining and elaborate on the concepts of data and data preprocessing using a sample dataset. (C2, C3)	PLO9,PLO10
	CO2 Students are able to apply algorithms for the classification, association, and clustering processes in corresponding to the presented issues. (C2, C3)	PLO9,PLO10
	CO3 Students are able to select and implement the most appropriate data mining techniques for issues that require data mining solutions. (C3)	PLO9,PLO10
	CO4 Students are able to plan and design data mining support applications to address a specific case study. (C3, C4, C5)	PLO9,PLO10
	CO5 Students are able to implement and demonstrate the use of tools suitable for addressing data mining issues. (C4, C5, C6)	PLO9,PLO10

Content	The subjects studied in this course include: Data Mining Concepts, Data Characterization, Data Preprocessing, Exploratory Data Analysis (EDA), Classification, Association, Clustering, Outlier Detection, Cluster Analysis, Information Retrieval, Text Mining, and Web Mining.
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	● J. Han, M. Kamber, and J. Pei, Data Mining: Concepts and Techniques, 4th ed. Cambridge, MA, USA: Morgan Kaufmann, 2022. ● K. Seefeld, Data Mining: Essential Concepts for Analytics, 2024. ● L. Gallardo, Mastering Data Mining with R: From Theory to Practice. 2023. ● I. D. Dinov, Data Science and Predictive Analytics: Biomedical and Health Applications Using R, 2nd ed. Cham, Switzerland: Springer, 2023. ● D. S. Sengar and V. Chandra, Modern Data Mining with Python: A risk-managed approach to developing and deploying explainable and efficient algorithms using ModelOps. BPB Publications, Feb. 26, 2024. ISBN: 978-9355519146. [Online]. Available: https://portal.igpublish.com/iglibrary/obj/BPB0000571?searchid=1755057679256m9vUaxYsyU619AH72sDKr ● Dr. J. Kumar, Data Warehouse and Data Mining: Concepts, Techniques and Real Life Applications. BPB Publications, Jan. 25, 2024. ISBN: 978-9355517340. [Online]. Available: https://portal.igpublish.com/iglibrary/obj/BPB0000554?searchid=1755057679256m9vUaxYsyU619AH72sDKr