UNIVERSITAS MATARAM
(University of Mataram)
FAKULTAS TEKNIK
(Faculty of Engineering)
PROGRAM STUDI TEKNIK INFORMATIKA
(Department of Informatics Engineering)

MODULE HANDBOOK DESCRIPTION

Database and Data Graf Analysis (P22B03)

Module designation	Database and Data Graf Analysis
Semester(s) in which the module is taught	*8 / fourth year*
Person responsible for the module	*I Wayan Agus Arimbawa ST M.Eng*
Language	*Indonesian*
Relation to curriculum	*Electives*
Teaching methods	*Lectures, Discussions, Project*
Workload (incl. contact hours, self-study hours)	Contact Hours every week, each week of the 16 weeks/semester including Evaluation • 2 x 50 minutes lecturer/week • 2 x 60 minutes class exercise/week • Self Study hours = 120 minutes/week Total workload 340 minutes/week
Credit points	*2 (~ 3,2 ECTS)*
Required and recommended prerequisites for joining the module	Big Data

Module objectives/intended learning outcomes	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 Database and Data Graf Analysis course are: 1. Understanding of background of graph databases 2. Get familiar with the real applications of general graph databases and social networks 3. Proficiency with the data model of certain/uncertain graphs 4. Proficiency with various queries over graph databases (including social networks) 5. Proficiency with the implementation of algorithms to tackle graph or social network problems 6. Understanding of queries over distributed graph databases 7. Proficiency with the answering of queries in distributed graph databases
Content	This course covers a number of important and useful problems in graph databases, especially social networks, such as the data model for certain/uncertain graphs (social networks), indexing over graphs, and query processing algorithms for graph databases (e.g., single-source path queries, path queries, reachability queries, keyword search queries, subgraph matching, etc.). This course contains important topics: 1. Introduction to graph databases 2. Real applications of graph databases 3. Social network analysis 4. Data models for certain/uncertain graphs 5. Queries over general graph databases 6. Influence maximization problems in social networks 7. Distributed graph processing
Examination forms	*Assignments, Quiz, Simulation, Project (Oral Presentation)*
Study and examination requirements	*Assignments 10%,* *Quiz 25%,* *Simulation 25%,* *Project 40%*

Reading list	1. Flygare, S., Simmon, K., Miller, C., Qiao, Y., Kennedy, B., Di Sera, T., ... & Schlaberg, R. (2016). Taxonomer: an interactive metagenomics analysis portal for universal pathogen detection and host mRNA expression profiling. Genome biology, 17(1), 1-18. 2. Brok, J., Lopez-Yurda, M., Tinteren, H. V., Treger, T. D., Furtwängler, R., Graf, N., ... & Spreafico, F. (2018). Relapse of Wilms' tumour and detection methods: a retrospective analysis of the 2001 Renal Tumour Study Group–International Society of Paediatric Oncology Wilms' tumour protocol database. The Lancet Oncology, 19(8), 1072-1081. 3. Devine, J., Vidal-García, M., Liu, W., Neves, A., Lo Vercio, L. D., Green, R. M., ... & Hallgrímsson, B. (2022). MusMorph, a database of standardized mouse morphology data for morphometric meta-analyses. Scientific data, 9(1), 230. 4. Robinson, I., Webber, J., & Eifrem, E. (2015). Graph databases: new opportunities for connected data. " O'Reilly Media, Inc.". 5. Aggarwal, C. C., & Wang, H. (Eds.). (2010). Managing and mining graph data (Vol. 40). New York: Springer. 6. Warren, J., & Marz, N. (2015). Big Data: Principles and best practices of scalable realtime data systems. Simon and Schuster.