Module Description

Module name	Database Management
Module level, if applicable	Bachelor of Informatics
Code, if applicable	21D12121102
Subtitle, if applicable	-
Course, if applicable	-
Semester(s) in which the module is taught	4th
Person responsible for the module	A. Ais Prayogi Alimuddin., ST., M.Eng
Lecturer	Ais Prayogi A. ST. M.Eng. Dr. Eng. Zulkifli Tahir ST. MSc. Dr. Eng. Ady Wahyudi Paundu ST. MT.
Language	Indonesian Language [Bahasa Indonesia]
Relation to Curriculum	This course is a compulsory course and offered in the 4th semester.
Type of teaching, contact hours	Teaching methods: [group discussion],[project-based learning], [problem-based learning]. Teaching forms: [lecture], [tutoria] CH : 08.00 - 16.00
Workload	For this course, students are required to meet a minimum of 90.67 hours in one semester, which consist of: - 26.67 hours for lecture, - 32 hours for structured assignments, - 32 hours for private study.
Credit points	2 credit points (equivalent with 3.4 ECTS)

Requirements according to the examination regulations	Students have participated in at least 80% of the learning activities (Academic Regulations, Chapter VII)
Recommended prerequisites	Database
Module objectives/intended learning outcomes	After completing the course, Students are able: **Intended Learning Outcomes (ILO):** **ILO 2 :** Have the knowledge of basic entrepreneurship, full technology stack and web development. **ILO 3 :** Apply the knowledge of computing and other related disciplines to analyse and identify solutions for any computing-based problem **ILO 4 :** Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements by applying computer science theory and software development fundamentals. **Course Learning Objective (CLO):** After taking the Database II course, students have advanced conceptual knowledge in the field of data science, especially the technology used in the implementation of database management systems. Students are also able to analyze computational problems in advanced concepts in databases and can identify solutions that can be applied. Students are also able to design and implement application solutions by utilizing databases by utilizing advanced concepts in databases and SQL. **Sub CLO :** ILO 2 => CLO 1: students have advanced conceptual knowledge in the field of data science, especially the technology used in the implementation of database management systems as well as advanced SQL concepts, namely views, triggers, functions, and stored procedures. ILO 3 => CLO 2: Students are also able to analyze computational problems in advanced concepts in databases and can identify solutions that can be applied. ILO 4 => CLO 3: Students can develop application solutions by utilizing advanced concepts in databases and SQL.
Content	Students will learn about : Mastering the concept of data processing in applications/systems with databases:

	1. Storage and Index Management a. Storage Architecture b. index concept c. B+ index d. Hash index 2. Query processing a. Query processing cost b. Query Optimization c. Query transformation to relational algebra d. Statistical estimates e. Query evaluation plan 3. SQL advanced concepts a. View b. Functions c. Stored Procedure d. Triggers 4. Transaction management a. Transaction Concept b. Storage structure c. Transaction Isolation d. Concurrency Control e. Concurrency Control Protocol f. Isolation Level g. System Recovery 5. Database Programming Concept a. Client/Server Architecture b. 2 -3 tier architecture c. Web Based Application
Forms of Assessment	Assessment techniques: [observation], [participation],[written test] Assessment forms: [quiz], [midterm exam], [final term exam], [assignment], [presentation] Quiz = 10%, MidTerm exam = 25% Final term exam = 25%, Assignment = 15% Presentation = 25% ILO2=>CLO1 :60% (Quiz, Midterm, Final term exam: written test) ILO3=>CLO2: 15% (Assignment: participation) ILO4=>CLO3: 25% (Presentation: observation)
Study and	**Study and examination requirements:**

examination requirements and forms of examination	- Students must attend 15 minutes before the class starts. - Students must switch off all electronic devices. - Students must inform the lecturer if they will not attend the class due to sickness, etc. - Students must submit all class assignments before the deadline. - Students must attend the exam to get a final grade. **Form of examination:** Written exam: Essay
Media employed	Video conference, slide presentation, Learning Management System (LMS).
Reading list	**Main :** [1] Sistem Basis Data dan SQL, Didik Setiyadi, 2020 **Support :** [1] Database System Concepts, Abraham Silberschatz 2019 [2] Modern Database Management, Hoffer, 2016 [3] Database Systems: The Complete Book, Ullmann 2010