	Universitas Negeri Surabaya Faculty of Engineering, Bachelor of Information Systems Study Program	Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
Database Management	5720103020		T=3	P=0	ECTS=4.77	3	July 18, 2024

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
	.....	.....	I Kadek Dwi Nuryana, S.T., M.Kom.

Learning model	**Case Studies**

Program Learning Outcomes (PLO)

PLO study program that is charged to the course

Program Objectives (PO)

PO - 1	Students are able to handle large-scale data problems
PO - 2	Students can optimize complex databases using DBMS
PO - 3	Students are able to communicate and collaborate with other colleagues to actively complete the case studies provided

PLO-PO Matrix

P.O
PO-1
PO-2
PO-3

PO Matrix at the end of each learning stage (Sub-PO)

P.O	Week															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PO-1																
PO-2																
PO-3																

Short Course Description	This course will discuss databases and their processing starting with a review of basic database material such as the ERD concept which will be continued with EERD (Enhanced Entity Relationship Diagram) which includes the topics of Specialization, Generalization and Categorization. Next, we will continue with a review of SQL and advanced SQL in the form of creating Subqueries, Transact SQL through functions, store procedures and triggers. The query discussion also discusses query optimization. To deepen knowledge about advanced theme databases, client server databases, distributed databases, internet databases, mobile databases, cloud databases, spatial databases and a little about datawarehousing and data mining are also discussed.
References	**Main :**
	1. Elmasri. Navathe. 2017. Fundamental of Database System 7th Edition. Pearson
	Supporters:
Supporting lecturer	Dr. Wiyli Yustanti, S.Si., M.Kom.

Week-	Final abilities of each learning stage (Sub-PO)	Evaluation		Help Learning, Learning methods, Student Assignments, [Estimated time]		Learning materials [References]	Assessment Weight (%)
		Indicator	Criteria & Form	Offline (*offline*)	Online (*online*)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

1	Students are able to relate database material to advanced database topics	1. Students can explain the concept of ERD 2. Students can explain the ERD Symbol 3. Students can explain the concept of mapping CDM to PDM 4. Students can explain the process of creating a database	**Form of Assessment** : Participatory Activities	Discussion and Practice 3 X 50	Discussion and Practice 3 X 50	**Material:** Review of ERD, EERD, EERD Symbols, Examples of EERD Implementation **Library:** *Elmasri. Navathe. 2017. Fundamentals of Database Systems 7th Edition. Pearson*	4%
2	Students can use EERD symbols to solve complex database problems	1. Students can explain the concept of EERD 2. Students can differentiate the concepts of specialization, generationalization and categorization 3. Students can explain the concept of EERD mapping 4. Students can apply the EERD concept to case studies	**Form of Assessment** : Participatory Activities	Discussion and Practice 3 X 50	Discussion and Practice 3 X 50	**Material:** Advanced EERD, Mapping EERD, Practice Questions **Library:** *Elmasri. Navathe. 2017. Fundamentals of Database Systems 7th Edition. Pearson*	4%
3	Students can use basic SQL	1. Students can use SQL : DDL 2. Students can use SQL : DML	**Form of Assessment** : Participatory Activities	Discussion and Practice 3 X 50	Discussion and Practice 3 X 50	**Material:** SQL DDL, SQL DML, SQL Practice (multi table) **Library:** *Elmasri. Navathe. 2017. Fundamentals of Database Systems 7th Edition. Pearson*	4%
4	Students can use Subquery-based SQL	1. Students can write SQL - Subquery for SELECT Operation 2. Students can write SQL - Subquery for INSERT Operation 3. Students can write SQL - Subquery for DELETE Operation 4. Students can write SQL - Subquery for UPDATE Operation	**Form of Assessment** : Participatory Activities	Discussion and Practice 3 X 50	Discussion and Practice 3 X 50	**Material:** Subquery - SELECT Operation, Subquery - INSERT Operation, Subquery - DELETE Operation, Subquery - UPDATE Operation **Library:** *Elmasri. Navathe. 2017. Fundamentals of Database Systems 7th Edition. Pearson*	5%
5	Students can create Functions and Store Procedures in a Database	1. Students can create Functions 2. Students can create Store Procedures	**Form of Assessment** : Participatory Activities	Discussion and Practice 3 X 50	Discussion and Practice 3 X 50	**Material:** Function, Store Procedure, Practice Questions **Library:** *Elmasri. Navathe. 2017. Fundamentals of Database Systems 7th Edition. Pearson*	5%
6	Students can create Triggers in the Database	1. Students can create Triggers 2. Students can use Trigger	**Form of Assessment** : Participatory Activities	Discussion and Practice 3 X 50	Discussion and Practice 3 X 50	**Material:** Trigger, Event Trigger, Practice Questions **Library:** *Elmasri. Navathe. 2017. Fundamentals of Database Systems 7th Edition. Pearson*	5%

7	Students can explain strategies for Query Optimization	1. Students can mention the factors that influence query optimization 2. Students can explain the concept of indexing 3. Students can explain the concept of database clustering 4. Students can explain SQL concepts in queries	**Form of Assessment** : Participatory Activities	Discussion and Practice 3 X 50	Discussion and Practice 3 X 50	**Material:** Database Indexing, Database Clustering, SQL **Library:** *Elmasri. Navathe. 2017. Fundamentals of Database Systems 7th Edition. Pearson*	5%
8	MIDDLE SEMESTER EXAMINATION (UTS)		**Form of Assessment** : Project Results Assessment / Product Assessment	UTS 3 X 50	UTS 3 X 50	**Material:** UTS **Library:**	25%
9	Students understand the concept of the Client Server database. Students can explain the implementation of the Client Server database	1. Students can explain the concept of Client Server database 2. Students can demonstrate the implementation of a Client Server database	**Form of Assessment** : Participatory Activities	Discussion and Practice 3 X 50	Discussion and Practice 3 X 50	**Material:** Spatial Database Definition, Spatial Database Architecture, Spatial Database Implementation **Library:** *Elmasri. Navathe. 2017. Fundamentals of Database Systems 7th Edition. Pearson*	4%
10	Students can explain the concept of a Distributed Database. Students can implement a Distributed Database	1. Students can explain the concept of Distributed Databases 2. Students can implement Distributed Databases		Discussion and Practice 3 X 50	Discussion and Practice 3 X 50	**Material:** Querying geometric type data, Reference (library function) for spatial data types with PostGIS **Library:** *Elmasri. Navathe. 2017. Fundamentals of Database Systems 7th Edition. Pearson*	0%
11	-	1. Students are able to understand XML concepts 2. Students are able to implement XML		Discussion and Practice 3 X 50	Discussion and Practice 3 X 50	**Material:** Spatial Relationship in PostGIS, Relationship-based Query **Library:** *Elmasri. Navathe. 2017. Fundamentals of Database Systems 7th Edition. Pearson*	4%
12	Students are able to understand the concept of spatial databases, vector/raster data, and implement spatial databases	1. Students are able to understand the concept of spatial databases 2. Students are able to understand vector/raster data 3. Students are able to implement spatial databases		Discussion and Practice 3 X 50	Discussion and Practice 3 X 50	**Material:** Cloud Database Concepts, Examples of Cloud Databases, Implementation of Cloud Databases **Library:** *Elmasri. Navathe. 2017. Fundamentals of Database Systems 7th Edition. Pearson*	4%

13	Students are able to understand concepts, provide examples, and implement cloud databases	1. Students are able to understand the concept of cloud databases 2. Students are able to provide examples of cloud databases 3. Students are able to implement cloud databases	**Criteria:** 5 **Form of Assessment** : Participatory Activities	Discussion and Practice 3 X 50	Discussion and Practice 3 X 50	**Material:** Students can explain the concept of cloud databases, students can give examples of cloud databases, students can carry out queries on cloud databases **Library:** *Elmasri. Navathe. 2017. Fundamentals of Database Systems 7th Edition. Pearson*	0%
14	Students are able to understand the concepts of datawarehousing, ETL, and OLAP	1. Students are able to understand the concept of datawarehousing 2. Students are able to understand ETL 3. Students are able to understand OLAP	**Form of Assessment** : Participatory Activities	Discussion and Practice 3 X 50	Discussion and Practice 3 X 50	**Material:** CUBE Extension in PostGIS, Functions in the CUBE concept, Query with GROUPING SET/FUNCTION **Library:** *Elmasri. Navathe. 2017. Fundamentals of Database Systems 7th Edition. Pearson*	5%
15	Students are able to understand data mining, clustering, classification and association techniques	1. Students are able to understand data mining techniques 2. Students are able to understand clustering 3. Students are able to understand classification 4. Students are able to understand associations	**Form of Assessment** : Participatory Activities	Discussion and Practice 3 X 50	Discussion and Practice 3 X 50	**Material:** No SQL, Mongo DB, Comparison of SQL and NO SQL database **Library:** *Elmasri. Navathe. 2017. Fundamentals of Database Systems 7th Edition. Pearson*	4%
16	UAS		**Form of Assessment** : Participatory Activities, Project Results Assessment / Product Assessment	UAS 1x1	UAS 1x1	**Material:** UAS **Literature:**	30%

Evaluation Percentage Recap: Case Study

No	Evaluation	Percentage
1.	Participatory Activities	60%
2.	Project Results Assessment / Product Assessment	40%
		100%

Notes

1. **Learning Outcomes of Study Program Graduates (PLO - Study Program)** are the abilities possessed by each Study Program graduate which are the internalization of attitudes, mastery of knowledge and skills according to the level of their study program obtained through the learning process.
2. **The PLO imposed on courses** are several learning outcomes of study program graduates (CPL-Study Program) which are used for the formation/development of a course consisting of aspects of attitude, general skills, special skills and knowledge.
3. **Program Objectives (PO)** are abilities that are specifically described from the PLO assigned to a course, and are specific to the study material or learning materials for that course.
4. **Subject Sub-PO (Sub-PO)** is a capability that is specifically described from the PO that can be measured or observed and is the final ability that is planned at each learning stage, and is specific to the learning material of the course.
5. **Indicators for assessing** ability in the process and student learning outcomes are specific and measurable statements that identify the ability or performance of student learning outcomes accompanied by evidence.
6. **Assessment Criteria** are benchmarks used as a measure or measure of learning achievement in assessments based on predetermined indicators. Assessment criteria are guidelines for assessors so that assessments are consistent and unbiased. Criteria can be quantitative or qualitative.
7. **Forms of assessment:** test and non-test.
8. **Forms of learning:** Lecture, Response, Tutorial, Seminar or equivalent, Practicum, Studio Practice, Workshop Practice, Field Practice, Research, Community Service and/or other equivalent forms of learning.

9. **Learning Methods:** Small Group Discussion, Role-Play & Simulation, Discovery Learning, Self-Directed Learning, Cooperative Learning, Collaborative Learning, Contextual Learning, Project Based Learning, and other equivalent methods.
10. **Learning materials** are details or descriptions of study materials which can be presented in the form of several main points and sub-topics.
11. **The assessment weight** is the percentage of assessment of each sub-PO achievement whose size is proportional to the level of difficulty of achieving that sub-PO, and the total is 100%.
12. TM=Face to face, PT=Structured assignments, BM=Independent study.