

Courses

Universitas Negeri Surabaya Faculty of Engineering, Undergraduate Study Program in Informatics Engineering

SEMESTER LEARNING PLAN

Course Family

Credit Weight

CODE

Document Code

Compilation Date SEMESTER T=4 P=0 ECTS=6.36 3 July 17, 2024 or Study Program Coordinator

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earning Jutcomes PLO)	PLO-2									ant to the needs owledge (KNO-0		
,	PLO-3				c and creative betency standa					vork in their field	of expertise	
	PLO-6 Able to analyze, design, build, and evaluate user interfaces and interactive applications based on user needs and transdisciplinary scientific developments (COM-01)											
	Program Objectives (PO)											
	PO - 1											
	PO - 2	Able to carry out work in accordance with the field of expertise and work competency standards in the field concerned										
	PO - 3	Able to transdis	Able to analyze user application interfaces and interactive applications based on user needs and transdisciplinary scientific developments									
	PO - 4		Able to design user application interfaces and interactive applications based on user needs and transdisciplinary scientific developments									
	PO - 5	Able to build and evaluate user application interfaces and interactive applications based on user needs and transdisciplinary scientific developments										
	PO - 6	Able to master theoretical concepts in the field of computer science/informatics knowledge										
	PO - 7	Able to	Able to design multi-platform applications that are relevant to industry and community needs									
	PO - 8	O - 8 Able to simulate multiplatform technology applications that are relevant to industrial and societal needs										
	PLO-PO Matrix											
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	to explain database concepts	conclude the definition of a database 2.Students can tell the history of databases 3.Students can name the components that make up a database 4.Students can show database architecture 5.Students can name various DBMS models	Form of Assessment : Participatory Activities, Tests	Teaching Learning (CTL) 3 X 50		Database Concepts Bibliography: Ramez Elmasri, Shamkant Navathe. Fundamentals of Database Systems. 7th edition. Pearson. 2016 Material: Database technology Bibliography: Ramez Elmasri, Shamkant Navathe. Fundamentals of Database Systems. 7th edition. Pearson. 2016 Material: Database & DBMS Bibliography: Ramez Elmasri, Shamkant Navathe. Fundamentals of Database & DBMS Bibliography: Ramez Elmasri, Shamkant Navathe. Fundamentals of Database & DBMS Bibliography: Ramez Elmasri, Shamkant Navathe. Fundamentals of Database Systems. 7th edition. Pearson. 2016	
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	2	to design data	state the meaning of the ER symbol 2.Students are able to define information in the real world into ER symbols 3.Students can use ERD symbols to draw a conceptual model of a	Assessment rubric is attached Form of Assessment : Participatory	Teaching Learning (CTL)	Introduction to data model Literature: Ramez Elmasri, Shamkant Navathe. Fundamentals of Database Systems. 7th edition. Pearson. 2016 Material: ER Model Library: Ramez Elmasri, Shamkant Navathe. Fundamentals of Database Systems. 7th edition. Pearson. 2016 Material: Entities, Attributes, and Primary Keys Bibliography: Ramez Elmasri, Shamkant Navathe. Fundamentals of Database Systems. 7th edition. Pearson. 2016 Material: Relationship ERD Readers: Ramez Elmasri, Shamkant Navathe. Fundamentals of Database Systems. 7th edition. Pearson. 2016 Material: Relationship ERD Readers: Ramez Elmasri, Shamkant Navathe. Fundamentals of Database Systems. 7th edition. Pearson. 2016 Material: Building ERD Readers: Ramez Elmasri, Shamkant Navathe. Fundamentals of Database Systems. 7th edition. Pearson. 2016	5%
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3	Students are able to design data models with relational concepts	 Students can state the rules for relationships between entities Students can use mapping rules to draw a relational model of data from a case study 	Criteria: Assessment rubric is attached Forms of Assessment : Participatory Activities, Project Results Assessment / Product Assessment, Tests	Problem Based Learning (PBL) 4 X 50	Material: Relational Data Models References: Ramez Elmasri, Shamkant Navathe. Fundamentals of Database Systems. 7th edition. Pearson. 2016 Material: Converting ER models to Relational Data Models References: Ramez Elmasri, Shamkant Navathe. Fundamentals of Database Systems. 7th edition. Pearson. 2016 Material: Reference Integrity Readers: Ramez Elmasri, Shamkant Navathe. Fundamentals of Database Systems. 7th edition. Pearson. 2016	5%
4	Students are able to normalize databases and use certain application programs to design logical databases	 Students can draw CDM using software. Students can change CDM to PDM using software. Students can connect the design to the RDBMS software 	Criteria: Assessment rubric is attached Form of Assessment : Participatory Activities, Project Results Assessment / Product Assessment	Contextual Teaching Learning (CTL) Problem Based Learning (PBL) 3 X 50	Material: Normalization Bibliography: Ramez Elmasri, Shamkant Navathe. Fundamentals of Database Systems. 7th edition. Pearson. 2016 Material: database logic design Readers: Ramez Elmasri, Shamkant Navathe. Fundamentals of Database Systems. 7th edition. Pearson. 2016	5%

5	Students are able	4	Criteria:	Problem	Material: -	5%
	to carry out Physical Database Design	 Students can change PDM into tables and physical relations Students can apply referential integrity, primary- foreign key 	Assessment rubric is attached Form of Assessment : Participatory Activities	Based Learning (PBL) 3 X 50	Material: - Physical Design Reader: Ramez Elmasri, Shamkant Navathe. Fundamentals of Database Systems. 7th edition. Pearson. 2016 Material: - primary key - foreign key References: Ramez Elmasri, Shamkant Navathe. Fundamentals of Database Systems. 7th edition. Pearson. 2016	
					Material: - design implementation (physical database design) References: Ramez Elmasri, Shamkant Navathe. Fundamentals of Database Systems. 7th edition. Pearson. 2016	

6	Students are able to process data in databases using SQL	 Students can CRUD data in a database Students can make changes to the structure and data in the database Students can apply queries to display data in the database 	Criteria: Assessment rubric is attached Form of Assessment : Participatory Activities	Problem Based Learning (PBL) 3 X 50	Material: SQL Bibliography: Ramez Elmasri, Shamkant Navathe. Fundamentals of Database Systems. 7th edition. Pearson. 2016 Material: DDL Bibliography: Raghu Ramakrishnan, Johannes Gehrke Database Management Systems, 3rd edition McGraw-Hill Education. 2018 Material: DML Bibliography: Ramez Elmasri, Shamkant Navathe. Fundamentals of Database Systems. 7th edition. Pearson. 2016 Material: Bibliography Query : Ramez Elmasri, Shamkant Navathe. Fundamentals of Database Systems. 7th edition. Pearson. 2016	15%
7	Students are able to apply queries to display data from databases	1.Students can design queries with clauses and joins 2.Students can display data from the database according to	Criteria: Assessment rubric is attached Form of Assessment : Participatory Activities	Contextual Teaching Learning (CTL) Problem Based Learning (PBL) 3 X 50	of Database Systems. 7th edition. Pearson. 2016 Material: Query Bibliography: Raghu Ramakrishnan, Johannes Gehrke Database Management Systems, 3rd edition	0%
8	Midterm Exam (UTS)	 Students can answer questions related to basic database concepts Students can solve database design problems using ERD techniques Students can solve database design problems using KRD techniques 	Criteria:	Virtual Learning 2 X 50	McGraw-Hill Education. 2018	0%

9	Students are able to differentiate the concept of a noSQL database from a relational database	1.Students differentiate NoSQL database concepts 2.Students can differentiate the characteristics of NoSQL database types	Criteria: Assessment rubric is attached Form of Assessment : Participatory Activities	Contextual Teaching Learning (CTL) 3 X 50		20%
10	Students are able to simulate data models using the NoSQL approach - document base database	 Students can install a database environment with the keyvalue concept Students can build data models using a key value approach 	Criteria:	Contextual Teaching Learning (CTL) Problem Based Learning (PBL) 3 X 50	Material: Document based database References: Shouhong Wang, Hai Wang. Business Database Technology, 2nd edition (Theories and Design Process of Relational Databases, SQL, Introduction to OLAP, Overview of NoSQL Databases). Universal Publishers. 2022	0%
11	Students are able to simulate data models using the NoSQL -key value database approach	 Students can install a database environment with the keyvalue concept Students can build data models using a key value approach 	Criteria: Assessment rubric is attached Form of Assessment : Participatory Activities, Project Results Assessment / Product Assessment	Problem Based Learning (PBL) 3 X 50	Material: key- value database References: Shouhong Wang, Hai Wang, Hai Wang. Business Database Technology, 2nd edition (Theories and Design Process of Relational Databases, SQL, Introduction to OLAP, Overview of NoSQL Databases). Universal Publishers. 2022	5%
12	Students are able to apply database concepts on multiple servers in a distributed manner	 Students can explain the concept of distributed storage (database) Students can determine distributed database technology or framework Students can simulate distributed database technology 	Criteria: Assessment rubric is attached	Contextual Teaching Learning (CTL) Problem Based Learning (PBL) 3 X 50	Material: Distributed Distributed Databases References: Shouhong Wang, Hai Wang, Hai Wang. Business Database Technology, 2nd edition (Theories and Design Process of Relational Databases, SQL, Introduction to OLAP, Overview of NoSQL Databases). Universal Publishers. 2022	5%

13	Students are able to differentiate the NewSQL database concept from the NoSQL concept and the relational database model	 Students can differentiate the NewSQL database concept from other database models Students can create databases with the NewSQL concept 	Criteria: Assessment rubric is attached	Contextual Teaching Learning (CTL) 3 X 50	Material: - NewSQL Database Concepts Reader: Shouhong Wang, Hai Wang, Hai Wang. Business Database Technology, 2nd edition (Theories and Design Process of Relational Databases, SQL, Introduction to OLAP, Overview of NoSQL Databases). Universal Publishers. 2022 Material: - NewSQL Databases). Universal Publishers. 2022 Material: - NewSQL Database Implementation Reader: Shouhong Wang, Hai Wang. Business Database Technology, 2nd edition (Theories and Design Process of Relational Databases, SQL, Introduction to OLAP, Overview of NoSQL Databases, Spatabase Technology, 2nd edition (Theories and Design Process of Relational Databases, SQL, Introduction to OLAP, Overview of NoSQL Databases). Universal Process of Relational Databases). Universal Databases). Universal Databases). Universal Databases). Universal	5%
14	Students are able to apply database management	 Students can install DBMS according to industry and community needs Students can configure database management including database creation, user management and security management Students can back up databases and restore databases 	Criteria: Assessment rubric is attached Form of Assessment : Project Results Assessment / Product Assessment	Contextual Teaching Learning (CTL) Problem Based Learning (PBL) 3 X 50	2022 Material: - Data Planning and Data Design Library: Shouhong Wang, Hai Wang. Business Database Technology, 2nd edition (Theories and Design Process of Relational Databases, SQL, Introduction to OLAP, Overview of NoSQL Databases). Universal Publishers. 2022 Material: - Database Maintenance Library: Shouhong Wang, Hai Wang. Business Database	20%

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15	Students are able to simulate databases using multiplatform technology	 Students can determine technology according to the case study/project given Students can design data models using the noSQL database concept approach Students can implement data models with DBMS with NoSQL concepts 	Criteria: Assessment rubric is attached Form of Assessment : Project Results Assessment / Product Assessment	Problem Based Learning (PBL) 3 X 50		10%
16	Final Semester Examination (UAS)	Students Can Demonstrate Final Project Results in Making an RDBMS	Criteria: Assessment rubric is attached	Project Based Learning 2 X 50		20%

Evaluation Percentage Recap: Project Based Learning

No	Evaluation	Percentage
1.	Participatory Activities	51.67%
2.	Project Results Assessment / Product Assessment	36.67%
3.	Test	1.67%
		90.01%

Notes

- 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.
- 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** abilities in the process and student learning outcomes are specific and measurable statements that identify the abilities 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.