Teaching Plan

FAKULTI TEKNOLOGI MAKLUMAT DAN KOMUNIKASI
UNIVERSITI TEKNIKAL MALAYSIA MELAKA

DATABASE

DITP 1333	SEMESTER 1	SESI 2020/2021

DITP 1333DATABASE (3, 2, 2)

TYPE OF COURSE: P

1.0 COURSE LEARNING OUTCOMES

At the end of the lesson, students should be able to:

1. Illustrate Entity Relationship Diagram (ERD) based on database and data modeling concepts. (C3)(PLO1)
2. Construct simple and complex SQL queries. (P3)(PLO2)
3. Explain suitable data modeling concepts and SQL in problem solving. (A3,CS1,CTPS2)(PLO5)

2.0 SYNOPSIS

This course will introduce student to the fundamental concepts of database management, which include the aspects of data models, database language; Structured Query Language (SQL) and Relational Algebra (RA) as well as database design. This course also focuses on practical skills which make students be able to apply fundamental concepts required for the use and design of Database Management Systems (DBMS).

3.0 PRE-REQUISITE

None

4.0 PRACTICAL

- Relational Database Design using Microsoft Visio.
- Relational Database Management Systems (RDBMS) using Oracle.

5.0 REFERENCES

[1] Coronel & Morrisa (2017) Database Systems: Design, Implementation and Management with CB VitalSource eBook 12th Edition. Cengage Learning.

[2] Connolly, T. & Begg, C. (2015) Database Systems: A Practical Approach To Design, Implementation, And Management. 6th Edition. Pearson.

[3] Elmasri, Ramez, Navathe, S.B. (2015) Fundamentals of Database Systems. 7th Edition. Addison-Wesley.

[4] Hoffer, Jeffrey A., Prescott, Mary B. & Mcfadden, Fred R. (2015) Modern Database Management 12th Edition. Prentice Hall

6.0 COURSE IMPLEMENTATION

a. Lecture : 2 hours per week for 14 weeks (Total = 28 hours)

b. Laboratory Activity : 2 hours per week for 14 weeks (Total = 28 hours)

7.0 EVALUATION

Assessment Method	CLO1	CLO2	CLO3	Scheme/Rubric/ Guideline
Assignment (15%)	TG-1 (5%)	TG-2 (10%)		TG-1.docx TG-2.docx
Lab Test (25%)	LBT-1 (10%)	LBT-2 (15%)		LBT-1.docx LBT-2.docx
Mid Semester Examination (15%)	MT-1 (15%)			MT.docx
Project (15%)			PRJ-1 (15%)	PRJ.docx
Final Examination (30%)	PA-1 (10%)		PA-2 (20%)	PA.docx
Total	**40%**	**25%**	**35%**	

8.0 STUDENT LEARNING TIME (SLT)

		Guided Learning Time				Independant Learning								Assessment Time				
Week	**CLO**	**L**	**T**	**P**	**O**	**L**	**T**	**P**	**O**	**F**	**T**	**A**	**O**	**F**	**T**	**A**	**O**	**SLT**
W1	1	2		2		1	0	1		0	0	0	0					6
W2	1	2		2		1	0	1		0	0	0	0					6
W3	1	2		2		1	0	1		0	0	0	0					6
W4	1	2		2		1	0	1		0	0	0	0					7
W5	1	2		2		1	0	1		0	0	1	0					10
W6	1	2		2		1	0	1		0	4	0	0		2			11
W7	3	2		2		1	0	1		0	4	0	0		2			12
W8	3	2		2		1	0	1		0	0	0	0					7
W9	2	2		2		1	0	1		0	0	2	0					6
W10	2	2		2		1	0	1		0	0	0	4					6
W11	2	2		2		1	0	1		0	0	0	0					6
W12	2	2		2		1	0	1		0	0	0	0					7
W13	2	2		2		1	0	1		0	0	0	0					6
W14	3	2		2		1	0	1		0	4	0	2		2		1	14
>W14										8	0	0	0	2				10
Overall		28	0	28	0	14	0	14	0	8	12	3	6	2	6	0	1	122
															SLT Credit Equivalent			3.05

9.0 DETAIL SYLLABUS AND TEACHING PLAN

Week	Session	Contents	References
1 (12 Oct 2020 – 16 Oct 2020)	Lecture 1	**Database Introduction** • Traditional File-Based System vs Database Approach • Roles in Database Environment • DBMS History • DBMS Advantages & Disadvantages **Database Environment** • ANSI-SPARC Architecture • Data Model and Conceptual Modeling • Functions of DBMS	[1] [2]
	Lab 1	**Introduction to MS Visio** • The Visio Environment • Using MS Visio to draw a basic ERD **Examples of Database Systems**	

2 (19 Oct 2020 – 23 Oct 2020)	Lecture 2 Lab 2	**Database System Development Lifecycle** • Information and database system development lifecycle • Database Analysis and Fact Finding Techniques **Relational Database Model** • Logical view of data • Key • Integrity Rules • Data Dictionary • Relationship within the Relational Database **ERD** • Identify Primary Key, Foreign Key and Relationship from database tables • Create ERD **Project Discussion** • Identify group members and project title	[1]
3 (26 Oct 2020 – 30 Oct 2020) *Maulidur Rasul (29 Oct 2020 – Thursday)*	Lecture 3 Lab 3	**Data Modeling (Part 1)** • Entities • Attributes • Relationships • Connectivity and Cardinality • Existence Dependence • Associative Entities **ERD** • Identify entities, attributes, relationship, bridge entity & dependent entity	[1]
4 (2 Nov 2020 – 6 Nov 2020)	Lecture 4 Lab 4	**Data Modeling (Part 2)** • Relationship Strength • Weak Entities • Relationship Participation • Relationship Degree • Recursive Relationship • Develop ER Diagram **ERD** • Design a complete ERD from a case study	[1]
5 (9 Nov 2020 – 13 Nov 2020)	Lecture 5	**Normalization (Part 1)** • Purpose of normalization • How normalization support database design	[1]

	Lab 5	• Data redundancy and update anomalies **Normalization of database tables**	
6 (16 Nov 2020 – 20 Nov 2020)	Lecture 6 Lab 6	**Normalization (Part 2)** • Functional dependencies • The process of normalization • First Normal Form (INF) • Second Normal Form (2NF) • Third Normal Form (3NF) **ERD Verification** • Verify ERD with Normalization	[1]
7 (23 Nov 2020 – 27 Nov 2020)	Lecture 7 Lab 7	**Data Definition Language (SQL DDL)** • SQL data types • Integrity enhancement feature • Data definition –create, alter and drop table **Oracle:** • Demonstration on Oracle environment **DDL** • Database – Create, Alter, Delete • Table – Create, Alter, Drop • Constraints – Create, Alter, Drop	[1], [2]
8 (28 Nov 2020 – 6 Dec 2020)		**MID SEMESTER BREAK**	
9 (7 Dec 2020 – 11 Dec 2020)	Lecture 8 Lab 8	**Data Manipulation Language (SQL DML)** • Insert row • Update row • Delete row **DML** • Insert, Update, Delete	[1], [2]
10 (14 Dec 2020 – 18 Dec 2020)	Lecture 9 Lab 9	**Relational Algebra and SQL** • Unary Operations: Selection and Projection • SQL: Simple Queries **Exercise on relational algebra and SQL** • Selection, projection and simple queries	[1], [2]

11 (21 Dec 2020 – 25 Dec 2020) *Christmas Day (25 Dec 2020 – Friday)*	Lecture 10 Lab 10	**Relational Algebra and SQL** • Aggregation and Grouping Operation • SQL on aggregation and grouping **Exercise on relational algebra and SQL** • Aggregation and grouping operation	[1], [2]
12 (28 Dec 2020 – 1 Jan 2021) *New Year's Day (1 Jan 2021 – Friday)*	Lecture 11 Lab 11	**Relational Algebra and SQL** • Cartesian Product • Join Operation – Equijoin and Outer join • SQL on Cartesian Product, Equijoin and Outer join **Exercise on relational algebra and SQL** • Cartesian Product, Equijoin and Outer join	[1], [2]
13 (4 Jan 2021 – 8 Jan 2021)	Lecture 12 Lab 12	**Relational Algebra and SQL** • Set Operation: Union, Difference and Intersection • SQL on Union, difference and intersection **Exercise on relational algebra and SQL** • Union, difference and intersection	[1], [2]
14 (11 Jan 2021 – 15 Jan 2021)	Lecture 13 Lab 13	**Relational Algebra and SQL** • Nested Queries • SQL on Nested Queries **Exercise on relational algebra and SQL** • Nested queries	[1], [2]
15 (18 Jan 2021 – 22 Jan 2021)	Lecture 14 Lab 14	**Database Connectivity** **Exercise on database connectivity**	[1], [2]
16 (23 Jan 2021 – 31 Jan 2021)		**REVISION WEEK**	
17 & 18 (1 Feb 2021 – 14 Feb 2021)		**FINAL EXAMINATION WEEK**	

10.0 MATRIX OF LEARNING OUTCOMES

SUBJECT vs PROGRAM LEARNING OUTCOME (PLO)

Subject	PROGRAM LEARNING OUTCOME (PLO)								
	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	
DITP 1333	X	X			X				

COURSE LEARNING OUTCOME (CLO) vs PROGRAM LEARNING OUTCOME (PLO)

LO	PROGRAM LEARNING OUTCOME (PLO)								
	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	
CLO1	X								
CLO2		X							
CLO3					X				

COURSE LEARNING OUTCOME (CLO)

CLO 1	Illustrate Entity Relationship Diagram (ERD) based on database and data modeling concepts (C3)(PLO1)
CLO 2	Construct simple and complex SQL queries (P3))(PLO2)
CLO 3	Explain suitable data modeling concepts and SQL in problem solving. (A3,CS1,CTPS2)(PLO5)

SUBJECT vs SOFT SKILLS

Subject	SOFT SKILLS																							
	communication skill					critical thinking & problem solving					team work			lifelong learning			entrepreneurship skills			ethics&moral professionalism			leadership skills		
	CS1	CS2	CS3	CS4	CS5	CTPS1	CTPS2	CTPS3	CTPS4	CTPS5	TS1	TS2	TS3	LL1	LL2	LL3	ES1	ES2	ES3	EM1	EM2	EM3	LS1	LS2	LS3
DITP 1333	X						X																	

LEARNING OUTCOME (LO) vs SOFT SKILLS

LO	SOFT SKILLS																							
	communication skill					critical thinking & problem solving					team work			lifelong learning			entrepreneurship skills			ethics & moral professionalism			leadership skills		
	CS1	CS2	CS3	CS4	CS5	CTPS1	CTPS2	CTPS3	CTPS4	CTPS5	TS1	TS2	TS3	LL1	LL2	LL3	ES1	ES2	ES3	EM1	EM2	EM3	LS1	LS2	LS3
LO1																								
LO2																								
LO3	X						X																	

SUBJECT vs TAXONOMY

Subject	Taxonomy																	
	Affective					Cognitive						Psychomotor						
	A1	A2	A3	A4	A5	C1	C2	C3	C4	C5	C6	P1	P2	P3	P4	P5	P6	P7
DITP 1333			X					X						X				

LEARNING OUTCOME (LO) vs TAXONOMY

LO	Taxonomy																	
	Affective					Cognitive						Psychomotor						
	A1	A2	A3	A4	A5	C1	C2	C3	C4	C5	C6	P1	P2	P3	P4	P5	P6	P7
LO1								X										
LO2														X				
LO3			X															

TEACHING PLAN APPROVAL

Prepared by;

…….
Name :
Stamp :

Date :

Approved by;

……..
Dean/Deputy Dean (Academic)/HOD
Stamp :

Date :

TEACHING PLAN IMPLEMENTATION (MID SEMESTER BREAK)

Comment:

Checked by;

……..
Dean/Deputy Dean (Academic)/ HOD
Stamp :

Date :_____

TEACHING PLAN IMPLEMENTATION (WEEK 16)

Comment:

Checked by;

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Dean/Deputy Dean (Academic)/ HOD
Stamp :

Date : _____