Template of Course Specification

Faculty: Computing & Information Technology

Department: Computer Science

Program: IS+ CS+ IT

I. General information about the course:						
1.	Course Title:	Database system design				
2.	Course Code and Number :	CS221				
3.	Credit Hours :	Lecture	Seminar/Tutorial	Practical	Training	Total
		2	*0*	*2*	*0*	*3*
4.	Study Level and Semester:	2th year , 2 semester				
5.	Pre-requisites (if any):	Introduction to Database				
6.	Co-requisites (if any) :					
7.	Program in which the course is offered	CS, IS and IT				
8.	Teaching Language:	English/Arabic				
9.	Study System :	Credit hours				
0.	Prepared by :	Dr. Sadik Al-Taweel				
1.	Approval date :					
2.	Approved by:					

II. Course Description:

- There are two principle goals for this course. First, to introduce the basic concepts in selected database issues such as database design using normalization, database security, transaction management and replication and mobile databases. Second, to provide practical experience in applying and using the SQL/PLSQL and Oracle 9*i* and require introduction to database.

III. Course Aims

This course aims to:

1. Know the normalization concept and how to use it in database design to optimize the database structure.
2. Understand how to secure the database and preprocess any failure that could be occurring. Also how to recover the database.
3. Create, update, and manipulate data and control access to a database using structured query language.
4. Build a complete project using Oracle 9i.

VI. Course Intended Learning Outcomes (CILOs) :

Knowledge and Understanding:

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

Knowledge and Understanding PILOs	Knowledge and Understanding CILOs
After completing this program, students would be able to:	After completing this course, students would be able to:
A2. Recognize the criteria and specifications appropriate to specific problems, plan strategies for their solution.	a1. **Distinguish** the main stages of the database system development lifecycle (DSDLC) and **recognize** the main phases of database design: conceptual, logical, and physical design.
A4.Describe the professional, economic, social, environmental, moral and ethical issues involved in the sustainable exploitation of computer technology and be guided by the adoption of appropriate professional.	**a2.** Approaches for integrating databases into the Web environment: – scripting Languages (JavaScript, VBScript, PHP, and Perl); – Common Gateway Interface (CGI); – HTTP cookies; – extending the Web server; – Java, J2EE, JDBC, SQLJ, CMP, JDO, Servlets, and JavaServer Pages (JSP); – Microsoft Web Platform: .NET, Active Server Pages (ASP), and ActiveX Data Objects (ADO); – Oracle Internet Platform.

Intellectual Skills :

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, students would be able to:	After completing this course, students would be able to:
B3. Identify appropriate theory, practices and tools for the specification, design and evaluation of computer-based systems.	b1. Explore how normalization can be used when designing a relational database.
B6. Evaluate systems in terms of general quality attributes and possible trade-offs presented within the given problem.	**b2.** Distinguish how to represent attributes shown on a form as 3NF relations using normalization.

Professional and Practical Skills

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

Professional and Practical Skills PILOs	Professional and Practical Skills CILOs
After completing this program, students would be able to:	After completing this course, students would be able to:
C1. Use effectively the tools for the construction and documentation of computer applications.	**c1. demonstrate** how OODBMSs and ORDBMSs compare in terms of data modeling, data access, and data sharing.
C2. Demonstration the effective deployment of computers to solve practical problems.	. c2. **Apply** integrity constraints using SQL including: – required data; – domain constraints; – entity integrity; – referential integrity; – general constraints. c3. Demonstrate how Oracle handles concurrency control and recovery.
C4. Apply appropriate practices and tools for the specification, design, implementation and evaluation of computer-based systems.	c4. **Implement** how to use advanced QBE facilities including parameter, find matched, find unmatched, crosstab, and autolookup queries.

Transferable (General) Skills :

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

Transferable (General) Skills PILOs	Transferable (General) Skills CILOs
After completing this program, students would be able to:	After completing this course, students would be able to:
D5 Appreciate the need for continuing professional development in recognition for lifelong learning.	**d1. Evaluate** approaches for integrating databases into the Web environment:

الموصف	المراجع	مسؤول البرنامج	رئيس القسم	عميد الكلية
		أ.وديع القباطي	أ.نبيل المخلافي	د. عبدالقادر العبادي

	– scripting Languages (JavaScript, VBScript, PHP, and Perl); – Common Gateway Interface (CGI); – HTTP cookies; – extending the Web server; – Java, J2EE, JDBC, SQLJ, CMP, JDO, Servlets, and JavaServer Pages (JSP); – Microsoft Web Platform: .NET, Active Server Pages (ASP), and ActiveX Data Objects (ADO); – Oracle Internet Platform.

VI. Alignment of CILOs to Teaching and Assessment Strategies

First: Alignment of Knowledge and Understanding CILOs

Knowledge and Understanding CILOs	Teaching Strategies	Assessment Strategies
a1. **Distinguish** the main stages of the database system development lifecycle (DSDLC) and **recognize** the main phases of database design: conceptual, logical, and physical design. **a2.** Approaches for integrating databases into the Web environment: – scripting Languages (JavaScript, VBScript, PHP, and Perl); – Common Gateway Interface (CGI); – HTTP cookies; – extending the Web server; – Java, J2EE, JDBC, SQLJ, CMP, JDO, Servlets, and JavaServer Pages (JSP); – Microsoft Web Platform: .NET, Active Server Pages (ASP), and ActiveX Data Objects (ADO); – Oracle Internet Platform.	Direct teaching (lectures, groups discussions, problem solving, tutorials **)**	**Writing Exams, Quiz, discussion Observation**

Second: Alignment of Intellectual Skills CILOs

Intellectual Skills CILOs	Teaching Strategies	Assessment Strategies
b1. Explore how normalization can be used when designing a relational database. **b2.** Distinguish how to represent attributes shown on a form as 3NF relations using normalization.	Interactive learning (forums, cooperative learning), Case study, Experimental learning and Survey	Assignments, quizzes, problem formulation, Exams, Technical reports and presentation.

Third: Alignment of Professional and Practical Skills CILOs

Professional and Practical Skills CILOs	Teaching Strategies	Assessment Strategies
c1. demonstrate how OODBMSs and ORDBMSs compare in terms of data modeling, data access, and data sharing. c2. **Apply** integrity constraints using SQL including: – required data; – domain constraints; – entity integrity; – referential integrity; – general constraints. c3.Demonstrate how Oracle handles concurrency control and recovery c4. **Implement** how to use advanced QBE facilities including parameter, find matched, find unmatched, crosstab, and autolookup queries.	- Direct teaching (tutorials, problem solving) - Interactive learning , Presentation, Experimental learning, projects.	Assignments, exams ,Tech reports and Presentation.

الموصف	المراجع	مسؤول البرنامج	رئيس القسم	عميد الكلية
		أ.وديع القباطي	أ.نبيل المخلافي	د. عبدالقادر العبادي

Fourth: Alignment of Transferable (General) Skills CILOs		
Transferable (General) Skills CILOs	**Teaching Strategies**	**Assessment Strategies**
d1. Evaluate approaches for integrating databases into the Web environment: – scripting Languages (JavaScript, VBScript, PHP, and Perl); – Common Gateway Interface (CGI); – HTTP cookies; – extending the Web server; – Java, J2EE, JDBC, SQLJ, CMP, JDO, Servlets, and JavaServer Pages (JSP); – Microsoft Web Platform: .NET, Active Server Pages (ASP), and ActiveX Data Objects (ADO); – Oracle Internet Platform.	Presentation , discussion , discussion groups ,Seminars , Role change playing ,E-learning, Interactive learning (cooperative learning) , Projects , Tutorials , case study, Research, Self learning	Tech Reports, Assignments, Exam.

VII. Course topics and sub-topics (theoretical and practical) with contact hours and alignment to CILOs

Topics/Units of Course Contents					
First: Theoretical Aspects					
No.	**Course Topics/Units**	**Sub-topics**	**No. of Weeks**	**Contact Hours**	**CILOs**
1	Overview		1	2	a1,b1
2	Relational Database Design, Normal Forms		2	2	a1,b1,b2
3	Relational Database Design, Normal Forms (cont.)		3	2	a1,b1,b2
4	Security		4	2	c2,d1
5	Security (cont.)		5	2	c2,d1
5	Transaction Management		6	2	c3
6	Transaction Management (cont.)		7	2	c3
7	Mid Term Exam		8	2	
8	Distributed Database		9	2	
9	Replication and Mobile Databases		10	2	
10	Replication and Mobile Databases (cont.)	Revision	11	2	a1,a2
11	OOD and Web Database		12	2	a2,d1
12			13	2	
13			14	2	
14	Revision		15	2	
15	Final Term exam		16	2	
Total number of weeks and hours			**16**	**32**	

الموصف	المراجع	مسؤول البرنامج	رئيس القسم	عميد الكلية
		أ.وديع القباطي	أ.نبيل المخلافي	د. عبدالقادر العبادي

Second: Practical/Tutorial/Clinical Aspects				
Write up practical/tutorial/clinical topics				
No.	**Practical/Tutorial/Clinical topics**	**No. of Weeks**	**Contact Hours**	**CILOs**
1	Introduction to Oracle Developer, Forms and Reports	1	2	c1,c2,c4
2	builder forms- Data block	2	2	c2,c4
3	Create forms, Button, Trigger-Enhancement performance forms	3	2	c1,c2
4	Radio Group- Radio button- List Item- Text Item	4	2	c1
5	Check Box- Image	5	2	c1
6	LOVs- move between interfaces- Text Item- Date	6	2	c1
7	Windows & Canvas- PL/SQL	7	2	c1,c2
8	**Records- syntax errors**	8	2	c3,c4
9	**Mathematical operations**	9	2	c1,c2
10	**Lists**	10	2	c2
11	**Queries and Reports**	11	2	c2,c4
12	**Reports**	12	2	c3,c4
15	**Projects Discussions**	13	2	c1,c2,c3,c4
Total number of weeks and hours		13	26	

I. Teaching Strategies

- Direct teaching (lectures, groups discussions, problem solving, tutorials)

-Interactive learning (forums, cooperative learning)

-Case study, Experimental learning, Presentation, projects and Survey

الموصف	المراجع	مسؤول البرنامج	رئيس القسم	عميد الكلية
		أ.وديع القباطي	أ.نبيل المخلافي	د. عبدالقادر العبادي

II. asks and Assignments :				
No.	**Task/Assignment**	**CILOs**	**Week due**	**Mark**
1	Assignment1		**4**	**3**
2	Quiz1		**6**	**2**
3	Midterm Exam		**8**	**20**
4	Assinment2		**11**	**3**
5	Quiz2		**13**	**2**
6	Lab		**13**	**20**
7	Final Exam		**16**	**50**

III. Learning Assessment:					
No.	**Assessment Tasks**	**Week due**	**Mark**	**Proportion of Final Assessment**	**Aligned CILOs**
1	**Homework/Tasks/Assignments**		10		
2	**Midterm Exam**		20		
4	**Lab**		20		
5	**Final Exam**		50		
Total			100		

IV. Learning Resources :
(Author, (Year), Book Title, Edition, Publisher, Country of publishing)
Textbooks-not more than 2
Thomas Connolly and Carolyn Begg, *Database Systems, A Practical Approach to Design, Implementation, and Management*, 4th Edition, Addison-Wesley, 2005 (ISBN: 0321210255)
Essential References-not less than 4
1. R. Elmasri and S.B. Navathe, *Fundamentals of Database Systems*, Benjamin/Cummings, 2nd Edition, 1994 2. A. Silberschatz, H.F. Korth and S. Sudarshan, *Database System Concepts*, McGraw Hill, 4th Edition, 2002
Electronic Materials and Web Sites
1. 2. 3.

الموصف	المراجع	مسؤول البرنامج	رئيس القسم	عميد الكلية
		أ.وديع القباطي	أ.نبيل المخلافي	د. عبدالقادر العبادي

V. Course Policies (To be determined by Faculty Deanship):	
Based on university regulations, the following aspects should be figured out:	
1.	**(**Class Attendance**) :**
2.	**(**Tardy**) :**
3.	**(**Exam Attendance/Punctuality**) :**
4.	**(**Assignments & Projects**) :**
5.	**(**Cheating**) :**
6.	**(**Plagiarism**) :**
7.	**(**Other policies**) :**

Template of Course Syllabus

Faculty : Computing & Information Technology

Department : Computer Science, information System and Information Technology

Program : IS, CS and IT

I. General information about the course instructor :

Name	Dr. Sadik Al-Taweel	Office Hours(3 Hours Weekly)					
Location & phone number	Information System Department Ex.4356- H/P 771878875	Sat	Sun	Mon	Tue	Wed	Thu
Email	Dr.sadiq@ust.edu	12-1	11-1	10-11	-	10-11	

II. General information about the course:

1.	Course Title :	Database system design				
2.	Course Code and Number :	CS221				
3.	Credit Hours :	Credit Hours				Total
		Theoretical	Seminar/Tutorial	Practical	Training	
		2	0	2	0	3
4.	Study Level and Semester:	2th year , 2 semester				
5.	Pre-requisites (if any):	Introduction to Database				
6.	Co-requisites (if any):					
7.	Program in which the course is offered:	CS, IS and IT				
8.	Teaching Language:	English/Arabic				
9.	Instruction location:	Information System Department Faculty of **Computing & Information Technology**				

الموصف	المراجع	مسؤول البرنامج	رئيس القسم	عميد الكلية
		أ.وديع القباطي	أ.نبيل المخلافي	د. عبدالقادر العبادي

I. Course Description

- There are two principle goals for this course. First, to introduce the basic concepts in selected database issues such as database design using normalization, database security, transaction management and replication and mobile databases. Second, to provide practical experience in applying and using the SQL/PLSQL and Oracle 9*i* and require introduction to database.

II. Course Aims:

This course aims to:

5. Know the normalization concept and how to use it in database design to optimize the database structure.
6. Understand how to secure the database and preprocess any failure that could be occurring. Also how to recover the database.
7. Create, update, and manipulate data and control access to a database using structured query language.

1) Build a complete project using Oracle 9i.

III. Course Intended Learning Outcomes (CILOs) :

a1. **Distinguish** the main stages of the database system development lifecycle (DSDLC) and **recognize** the main phases of database design: conceptual, logical, and physical design.
a2. Approaches for integrating databases into the Web environment:
– scripting Languages (JavaScript, VBScript, PHP, and Perl);
– Common Gateway Interface (CGI);
– HTTP cookies;
– extending the Web server;
– Java, J2EE, JDBC, SQLJ, CMP, JDO, Servlets, and JavaServer Pages (JSP);
– Microsoft Web Platform: .NET, Active Server Pages (ASP), and ActiveX Data Objects (ADO);
– Oracle Internet Platform.
b1. Explore how normalization can be used when designing a relational database.
b2. Distinguish how to represent attributes shown on a form as 3NF relations using normalization.
c1. demonstrate how OODBMSs and ORDBMSs compare in terms of data modeling, data access, and data sharing.
c2. **Apply** integrity constraints using SQL including:
– required data;
– domain constraints;
– entity integrity;
– referential integrity;
– general constraints.
c3.Demonstrate how Oracle handles concurrency control and recovery
c4. **Implement** how to use advanced QBE facilities including parameter, find matched, find unmatched, crosstab, and autolookup queries.
d1. Evaluate approaches for integrating databases into the Web environment:
– scripting Languages (JavaScript, VBScript, PHP, and Perl);
– Common Gateway Interface (CGI);
– HTTP cookies;
– extending the Web server;
– Java, J2EE, JDBC, SQLJ, CMP, JDO, Servlets, and JavaServer Pages (JSP);
– Microsoft Web Platform: .NET, Active Server Pages (ASP), and ActiveX Data Objects (ADO);
– Oracle Internet Platform.

الموصف	المراجع	مسؤول البرنامج	رئيس القسم	عميد الكلية
		أ.وديع القباطي	أ.نبيل المخلافي	د. عبدالقادر العبادي

IV. Course Contents

Theoretical Aspect:

No.	Course Units	Sub-topics	Week due	Contact Hours
1	Overview		1	2
2	Relational Database Design, Normal Forms		2	2
3	Relational Database Design, Normal Forms (cont.)		3	2
4	Security		4	2
5	Security (cont.)		5	2
6	Transaction Management		6	2
7	Transaction Management (cont.)		7	2
8	Mid Term Exam		8	2
9	Distributed Database		9	2
10	Replication and Mobile Databases (cont.)		10	2
11			11	2
12	OOD and Web Database		12	2
13			13	2
14			14	2
15	Revision		15	2
16	Final Term exam		16	2
Total number of weeks and hours			**16**	**32**

Second: Practical/Tutorial/Clinical Aspects :

Write up practical/tutorial/clinical topics

No.	Practical/Tutorial/Clinical topics	No. of Weeks	Contact Hours
1.	Introduction to Oracle Developer, Forms and Reports	**1**	**2**
2.	builder forms- Data block	**2**	**2**
3.	Create forms, Button, Trigger-Enhancement performance forms	**3**	**2**
4.	Radio Group- Radio button- List Item- Text Item	**4**	**2**
5.	Check Box- Image	**5**	**2**
	LOVs- move between interfaces- Text Item- Date	**6**	**2**
	Windows & Canvas- PL/SQL	**7**	**2**
	Records- syntax errors	**8**	**2**
	Mathematical operations	**9**	**2**

الموصف	المراجع	مسؤول البرنامج	رئيس القسم	عميد الكلية
		أ.وديع القباطي	أ.نبيل المخلافي	د. عبدالقادر العبادي

	Lists	**10**	**2**
	Queries and Reports	**11**	**2**
	Reports	**12**	**2**
	Projects Discussions	**13**	**2**
Total number of weeks and hours		**13**	**26**

V. Teaching Strategies

- Direct teaching (lectures, groups discussions, problem solving, tutorials)

-Interactive learning (forums, cooperative learning)

- Case study, Experimental learning, Presentation, projects and Survey

VI. Tasks and Assignments

No.	Task/Assignment	Week due	Mark
.١			
.٢			
.٣			

VII. Learning Assessment:

No.	Assessment Tasks	Assessment day & date	Mark	Weight
1	Assignment1	**4**	**3**	3%
2	Quiz1	**6**	**2**	2%
3	Midterm Exam	**8**	**20**	20%
4	Assinment2	**11**	**3**	3%
5	Quiz2	**13**	**2**	2%
6	Lab	**13**	**20**	20%
7	Final Exam	**16**	**50**	50%
	Total		**100**	**100%**

الموصف	المراجع	مسؤول البرنامج	رئيس القسم	عميد الكلية
		أ.وديع القباطي	أ.نبيل المخلافي	د. عبدالقادر العبادي

VIII. Learning Resources
Text Book: Thomas Connolly and Carolyn Begg, *Database Systems, A Practical Approach to Design, Implementation, and Management*, 4th Edition, Addison-Wesley, 2005 (ISBN: 0321210255)
Essential References-not less than 4
1- R. Elmasri and S.B. Navathe, *Fundamentals of Database Systems*, Benjamin/Cummings, 2nd Edition, 1994 2-A. Silberschatz, H.F. Korth and S. Sudarshan, *Database System Concepts*, McGraw Hill, 4th Edition, 2002

IX. Course Policies (To be determined by Faculty Deanship)	
1.	**Class Attendance :**
2.	**Tardy :**
3.	**Exam Attendance/Punctuality:**
4.	**Assignments & Projects:**
5.	**Cheating:**
6.	**Plagiarism:**
7.	**Other policies:**

الموصف	المراجع	مسؤول البرنامج	رئيس القسم	عميد الكلية
		أ.وديع القباطي	أ.نبيل المخلافي	د. عبدالقادر العبادي