

CSCE 520: Database System Design

1. Course number and name: CSCE 520: Database System Design
2. Credit: 3-hrs; Contact: 3 lectures of 50 minutes each or 2 lectures of 75 minutes each per week
3. Instructor: Spring 2011: Csilla Farkas
4. Text book: Jeffrey D. Ullman and Jeniffer Widom, *A First Course in Database Systems*, 3rd edition, Prentice Hall, 2007, ISBN: 013600637X
Rajshekhar. Sunderraman, *Oracle 9i Programming, A Primer*, Addison Wesley Longman, Inc., 2003, ISBN: 0-321-19498-5.
5. Specific course information
 - a. Catalog description: Database management systems; database design and implementation; security, integrity, and privacy.
 - b. Prerequisites: CSCE 240 or GEOG 563
 - c. Required in CIS curriculum, elective in CS and CE curricula
6. Specific goals for the course
 - a. Specific outcomes of instruction:
 1. Describe the major components of a database management system and state their functions and purpose.
 2. Develop a data model for a database application using an appropriate modeling tool such as ER diagrams.
 3. Use the concepts of data normalization to develop well-designed database applications.
 4. Implement a database application using an appropriate relational DBMS.
 5. Use SQL implement, manage, and query a database.
 6. Describe major operational issues associated with database applications, including transaction management, security, and integrity.
 - b. Relation of course outcomes to Student Outcomes: CE: see page 2; CS & CIS: see page 3
7. Topics covered and approximate weight (14 weeks, 3 hours/week, 42 hours total)
 1. Introduction;
 2. Relational database management systems: data definition, data manipulation using SQL, system catalog, views, database languages;
 3. Logical database design: entity-relations hip models, normal forms, normalization;
 4. Relational data model: formal definition, integrity rules, relational algebra and calculus;

5. Operational issues: transaction management, recovery and concurrency, security and integrity, database products.

c.

Computer Engineering

Relation of Course Outcomes to EAC Student Outcomes*

Course Outcomes (CE)	Student Outcomes											
	(a) apply knowledge of mathematics, science, and engineering	(b) design and conduct experiments, ... interpret data	(c) design a system, component, or process to meet desired needs ...	(d) function on multidisciplinary teams	(e) identify, formulate, and solve engineering problems	(f) understand of professional and ethical responsibility	(g) communicate effectively	(h) the broad education to understand the impact of engineering solutions ...	(i) a recognition of the need for, and the ability to engage in lifelong learning	(j) a knowledge of contemporary issues	(k) use the techniques, skills, and modern engineering tools ...	(CE) demonstrate knowledge of discrete mathematics [CE]
Criteria	a	b	c	d	e	f	g	h	i	j	k	CE
1. Describe the major components of a database management system and state their functions and purpose.	3		3					2	1	2		
2. Develop a data model for a database application using an appropriate modeling tool such as ER diagrams.			3		2						1	2
3. Use the concepts of data normalization to develop well-designed database applications.	3		3		2			2			2	2
4. Implement a database application using an appropriate relational DBMS.		3			3						3	
5. Use SQL to implement, manage, and query a database.	2	3			3						3	

6. Describe major operational issues associated with database applications, including transaction management, security, and integrity.	3		2		2	2		1	2	2		
--	---	--	---	--	---	---	--	---	---	---	--	--

* 3 = major contributor, 2 = moderate contributor, 1 = minor contributor; blank if not related

d.

Computer Science & Computer Information Systems

Relation of Course Outcomes to CAC Student Outcomes*

Course Outcomes (CS & CIS)	Student Outcomes											
	All									CS		CIS
	(a) apply knowledge of computing and mathematics appropriate to the discipline	(b) analyze a problem, and identify and define the computing requirements ...	(c) design, implement, and evaluate a computer-based system, ...	(d) function effectively on teams to accomplish a common goal	(e) An understanding of professional, ethical, legal, ... responsibilities	(f) communicate effectively with a range of audiences	(g) analyze the local and global impact of computing on ... society	(h) Recognition of the need for ... continuing professional development	(i) current technical skills, and tools necessary for computing practice	(j) apply mathematical foundations, algorithmic principles, and CS theory ...	(k) apply design and development principles	(l) An understanding of processes that support the information systems environment.
Criteria	a	b	c	d	e	f	g	h	i	j	k	l
1. Describe the major components of a database management system and state their functions and purpose.	3	2	3				2	1	2		2	2
2. Develop a data model for a database application using an appropriate modeling tool such as ER diagrams.		3	3							2	3	
3. Use the concepts of data normalization to develop well-designed database applications.	3	3	3							2	3	
4. Implement a database application using an appropriate relational DBMS.		3	3						3			
5. Use SQL to implement, manage, and query a database.	2	3	3						3			

6. Describe major operational issues associated with database applications, including transaction management, security, and integrity.	3	2	3		2		2	2				2
--	---	---	---	--	---	--	---	---	--	--	--	---

* 3 = major contributor, 2 = moderate contributor, 1 = minor contributor; blank if not related