**UNIVERSITY OF UTAH COLLEGE OF NURSING**

**Masters Program**

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| COURSE NUMBER: | NURS 6803 |
| TITLE: | Clinical Database Design |
| PREREQUISITE: | Consent of the instructor |
| TOTAL CREDITS: | 3 |
| DIDACTIC CREDITS: | 3 |
| CLINICAL CREDITS: | 0 |
| ACADEMIC TERM OFFERED: | Spring Semester |
| FACULTY: | Katherine Sward, PhD, RN<br>Assistant Professor<br>Office: 5725 G HSEB<br>Phone: 801-585-1481 (cell 801-541-2968)<br>Email: kathy.sward@nurs.utah.edu<br>OFFICE HOURS: by appointment |

Please use the course learning management system e to submit assignments and communicate about course issues. Use the e-mail address above for non-course communications and to schedule appointments.

**COURSE DESCRIPTION**

Development and maintenance of clinical databases and application in solving clinical problems. Design methods, database structures, indexing, data dictionaries, retrieval languages, and data security are presented.

**DIDACTIC OBJECTIVES**

The student will

1. Differentiate the major components of a database and their function in an integrated database system.
2. Apply the database design process to a defined clinical area.
3. Design and implement a normalized relational database to manage a clinical information process.
4. Compare and contrast various methods of data retrieval and organization.
5. Analyze current topics and issues in data management and database design.
6. Utilize SQL for database creation and manipulation

**TEACHING METHODS:**

Lectures, discussions, assigned readings, homework/quiz, hands-on database development. The course is designed as a sequence of modules. The final project is documentation of a database that you will design and build.

Textbooks: Connolly, T & Begg, C. (2005). *Database systems: A practical approach to design, implementation, and management*. Fifth Edition. NY: Addison-Wesley.

Additional readings as assigned.

Software: You will be expected to use software to run queries and you will be expected to build a database. I will assume you are using Microsoft Access 2007. This is Windows software but there are work-arounds that have allowed students to use a Mac computer in the past. Informatics students may elect to use other DBMS (such as Oracle or MySQL) with instructor approval.

Other software you may find helpful: A spreadsheet such as Excel. A drawing program that can do basic shapes (like Visio, SmartDraw, or similar. Or you can use the drawing tools in Word or Powerpoint). A PDF writer is helpful but not required.

**EVALUATION:**

CUMULATIVE PERCENTS FOR THE COURSE GRADE:

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|---|---|
| 94 - 100 A | 80 - 83.99 B- |
| 90 - 93.99 A- | 77 - 79.99 C+ |
| 87 - 89.99 B+ | 73 - 76.99 C |
| 84 - 86.99 B | |

All activities will be evaluated for quality and partial credit may be awarded. Students are expected to complete **all modules** during the semester and to adhere to posted deadlines. You may work ahead, but points will be subtracted for late work. Each module is graded internally, and then the module is assigned a percent of the final grade, as listed below.

| Module | Percent of final grade |
|---|---|
| Background and Fundamentals | 10 |
| Relational Theory & Language | 15 |
| DB designer perspective | 10 |
| Conceptual design | 15 |
| Logical design | 15 |
| Physical design | 15 |
| Beyond design | 15 |
| Final project | 5 |
| Total | 100 |

**TOPICAL OUTLINE:**

Background: Introduction to databases (DB)—DB vs. spreadsheet

Fundamentals

- DB history, History of Relational Model
- Informatics roles related to DB
- Basic user perspective: user requirements, business rules, forms
- DB models
- Special topics: Ethics, patient privacy

Relational Theory & Languages

- Relational Model, Relational Algebra
- Advanced user perspective: SQL
  - Introduction to specific DBMS (e.g., MS Access, Oracle, MySQL)
  - Introduction to SQL for data manipulation

DB Designer Perspective

- SDLC and DB life cycle
- Database Evaluation & Selection
- Trends and Issues related to databases.
  - Web databases
  - Data Warehousing
  - OLAP, Data Mining (KDD)

Conceptual Design

- ER Model, Advanced EER model
- Database integration
- Evaluating conceptual design

Logical Database Design

- Health care primary key
- Transforming the ERD
- Normalization

Physical Database Design

- Data dictionary
- Indexes
- Using coded data
- SQL: Data definition
- Special topics: Security. Monitoring and tuning. Denormalization.

Beyond design

- Developing an application. Forms, queries, & reports
- SQL: Advanced queries
- User Interface Functionality
- Usability Testing, designing for special populations

**ADA – Nondiscrimination and Disability Access Statement:**
The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Union Building, 581-5020 (V/TDD). CDS will work with you and the instructor to make arrangements for accommodations.

## Additional Information

**University of Utah Student Code**
All students are expected to maintain professional behavior in the classroom setting, according to the Student Code, spelled out in the Student Handbook. Students have specific rights in the classroom as detailed in Article III of the Code. The Code also specifies proscribed conduct (Article XI) that involves cheating on tests, plagiarism, and/or collusion, as well as fraud, theft, etc. Students should read the Code carefully and know they are responsible for the content. Dismissal from a course and/or the college can result from unprofessional behavior. Students have the right to appeal such action to the Student Behavior Committee.

**Online Guidelines:** There are responsibilities that come with taking a course online.

Electronic or equipment failure: It is your responsibility to maintain your computer and other equipment needed to participate in online forums in a manner that enhances your experience. Equipment failures will not be an acceptable excuse for late or absent assignments.

Classroom equivalency: Online communications, including e-mail, discussion threads, and chat rooms are equivalent to the classroom and are subject to the Student Code. Specifically:

- Posting photos or comments that would be off-topic in a classroom are still off-topic in a discussion thread. Off-color, angry or abusive language is not appropriate.
- Use of ALL CAPS, except for titles, is seen as the equivalent of shouting online. Also avoid overuse of punctuation marks such as exclamation points !!!! and question marks ?????.
- Online communications, including e-mail, are University property and subject to GRAMA regulations. Privacy regarding online communications must not be assumed unless mutually agreed upon in advance.
- As with assignments, instructors will respond to e-mails in a “reasonable” amount of time. Use the e-mail address posted in this syllabus as the preferred means of communication. Note that content may be shared with the class when there are valid teaching/learning reasons for doing so and mutual privacy agreements for the communications have not been previously made.