Computer Science 60: Database Concepts and Applications

Section **4119** meets Mondays, 6:45pm – 9:50pm in Room BUS 250 SMC Fall Semester 2012

Instructor: **Dr. Harold Rogler**

# Office hours: Monday and Wednesday 5:15p–6:30p; Thursday 3:30p–5:30p BUS 220 J

e-mail: [rogler\_harold@smc.edu](mailto:rogler_harold@smc.edu) Begin the subject of your e-mail with **CS60**

Voice mail: **310-434-8472** Begin your message with **CS60** and **your name**

**CS60 Lectures** and **CS60 Projects** are on a server at

AcShare\BusData\ROGLER\_HAROLD\CS60 Database Concepts

Following the procedures in the rectangle on page 3, copy and paste your projects to

\\Zeus\data\ROGLER\_HAROLD\CS60 Database Concepts

## Syllabus

27 Aug **Chapter 01** Introduction to files, databases, and database management systems,

Class rules, Orientation to the computing lab

3 Sep **Class does not meet** (Labor Day)

10 Sep **Chapter 02** File Systems and Databases

17 Sep**Chapter 03** The Relational Database Model

24 Sep **Chapter 04** Entity Relationship Modeling

1 Oct **Chapter 04** continues

8 Oct **Exam 1**, followed by a lecture on Chapter 05 Normalization of tables

15 Oct **Chapter 05** continues

22 Oct **Chapter 05** continues, and **CS60 Chapter 06** Oracle Datatypes

29 Oct **Chapter 07** DDL Commands Create Table, Create Index

5 Nov **Chapter 08** DML Commands Insert, Delete, Update, Select

**Deadline for approval on topic for optional class project**

12 Nov **Class does not meet** (Veterans Day)

19 Nov **Chapter 09** Programming an Oracle Database with PLSQL

26 Nov **Exam 2**, followed by a lecture on **Chapter 10** DML Triggers

3 Dec **Optional class project due**

**Chapter 11** Stored Functions

**Chapter 12** Stored Procedures

10 Dec **Chapter 13** Transaction management and concurrency control

17 Dec **Final exam** 6:45p-9:45p covers all assigned chapters, lectures, and projects

Lecture notes by Harold Rogler: CS60 Database Concepts and Application files on the server at

**My Computer\AcShare\BusData\Rogler\_Harold\CS60 Database Concepts\CS60 Lectures.**

Please copy and print these lectures.

Optional Text: Peter Rob and Carlos Coronel, *Database Systems—Design, Implementation, and Management*, Edition 7th or later, Course Technology.

**Syllabus is subject to change**

**Course outline:** This course introduces modern database concepts while emphasizing the relational database model. Topics include design methodologies, normalization of tables to reduce redundancies, supertypes and subtypes to reduces nulls, data integrity, referential integrity, and using locks and other techniques for concurrency control in a multiuser database. Factors that should be balanced during the design of a database are described. To document databases, entity relationship diagrams, relational schemas, and data dictionaries are described. Principles are applied by performing exercises using MySQL or other database management system. SQL and other languages are used to create and fill tables, retrieve data, and manipulate it by stored programs. **Advisory prerequisites:** CS3 and one programming course.

**Grades:** **A**: 90% and above, **B**: 80-90-%, **C**: 70-80-%, **D**: 60-70-%, **F**: 0-60-%

40% Five to seven projects

30% Two exams, each 15%

30% Final exam

100%

5% max Optional Class Project

The purpose of the **Optional Class Project** is for you to display initiative and to write, edit, or program. A Class Project can be a paper that you write on some database topic that you want to learn more about. It can be a critical review of a chapter of the lecture notes. It could be a special writing, drawing, or programming assignment or a project in computer-based education (e.g., how you would use a computer to teach some part of database programming or database concepts). Advanced approval from Dr. Rogler is required.

Student Learning Outcomes:

1. Students explain differences between file-based, hierarchical, network, relational, and object-oriented databases and the many design principles that reduce redundancy and increase performance. As assessed by: design and coding projects and exams

2. Students describe the use of a database management system language to apply the concepts by creating tables, populating them with data, retrieving data, creating indexes, and creating programs that manipulate data. As assessed by design and coding projects and exams.

You need some way to back up your projects and store lectures and other references. Your backup could be USB flash drive or storage on some website.

You need four Scantron forms No. 882-E, 882-ES, or AccuScan #25110 (with letter choices A, B, C, D, E), #2 pencils, and an eraser.

The projects are due at 11:00pm on the due date of the project. Projects submitted late receive no credit. You will be dropped if you don't turn in two projects.

Some projects may include **extra-credit tasks** and **extra credit** is occasionally given for excellence.

Class attendance is mandatory. You may be dropped from the class after four unexcused absences.

**Students with Disabilities:** I am happy to make academic adjustments for students with documented disabilities.  Please contact the Center for Students with Disabilities if this applies to you.  The Center for Students with Disabilities is located in Room 101 of the Admissions/Student Services Complex, located on the north side of Main campus, next to Admissions.  For more information, call (310) 434-4265 or (310) 434-4273.

Submit your projects electronically. Once you submit your files or folders, you will not be able to read, move, copy, rename, or delete them (but you can submit another version with a slightly different file name as described below). Procedures:

**1.** If you have only **one file** to submit, name it **CS60\_*ProjectNumber*\_*LastName\_FirstName.****ext* where *ProjectNumber* is the number of the project (1, 2, 3, …), LastName and FirstName are your names, the character \_ is the underscore, and *ext is the file extension such as docx or SQL.* If you have several files to submit, place them in a folder and name your folder CS60\_*ProjectNumber*\_*LastName\_FirstName*

**2**. If you stored the folder or file on your USB flash memory, open the USB device’s window so you can see the folder’s icon or file’s icon. Select that folder or file and copy it: use the keyboard shortcut **<Ctrl>+C** or right click and choose copy.

**3.** From the desktop shortcut “Data on Zeus”, click your way along the remainder of the path **\\zeus\data\rogler\_harold\CS60 Database Concepts** and click <OK>

Paste your folder or file into that project folder” using the keyboard shortcut **<Ctrl>+V** or right-click and *paste* (not Save As, and not Drag & Drop). **Check your file size** to make sure it is not 0KB, and check that your filename and file date are correct.

**4.** If you drop your folder or file in the wrong folder, tell me in writing or e-mail what you did.

If you need to submit another version, add \_**B** **after** your *FirstName* (for example, CS60\_1\_Rogler\_Harold\_**B**.doc. In an alphabetical listing, your files

CS60\_1\_Rogler\_Harold.docx

CS60\_1\_Rogler\_Harold**\_B**.docx

CS60\_1\_Rogler\_Harold**\_C**.docx will list in that order and I’ll grade the last one.