

# COP 4710-0001

## Databases

Fall 2018

*Syllabus*

Course Website: <http://www.ifmlab.org/courses.html>

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TA Office Hours: Tuesday 2:30-4:30PM (MENG and BAI)

Office: TBD

Course Teaching Assistant: Shaeke SALMAN (**Project**)

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TA Office Hours: Thursday 1:20-3:20PM (SALMAN)

Office: TBD

### Course Information:

- **Date:** August 27, 2018 – December 14, 2018
- **Time:** M/W/F 1:25PM-2:15PM
- **Venue:** MCH 0201

### Schedule and Slides:

- The course schedule and slides are available at <https://docs.google.com/spreadsheets/d/1XViVj49vYuEkeStePMunTLHQhxY-stxUi54aIno1hHQ/edit#gid=0>

### Course Description:

As the first introductory course for databases, **COP4710** studies the fundamentals of relational database management systems (RDBMS). Materials include, but are not limited to, the ER(Entity-Relationship) model and its mapping to the relational data model, the algebraic language in the relational data model and its relationship to the commercial relational query language: SQL, database design that conforms to different normal forms, database applications, database indexing, transaction management, recovery and other advanced topics. Furthermore, students will participate in a semester-long project and build a web-based database system (e.g., an online bookstore) starting with a customer specification. In summary, this course is about the principles of designing and developing applications using relational database systems.

### Course Objectives:

- To learn the basic principles of designing and implementing an application using relational database systems;
- To understand in depth how a relational database application works for designing (the schema for), mapping and querying structured data;
- To realize the importance of social, technological, and ethical issues involved in data management.

#### Topics Covered:

- ER (Entity-Relationship) model
- algebraic language in the relational data model
- commercial relational query language: SQL
- database design
- database applications
- database indexing
- transaction management
- recovery, etc..

#### Prerequisites:

Students should come with **good programming skills**. **COP3330: Object-oriented Programming** and **MAD2104: Discrete Mathematics** or equivalents courses are required. If you are not sure whether you have the right background, please contact the instructor.

**Note:** We will not cover programming-specific issues in this course.

#### Textbook:

- **Required textbook:** [\*Database Systems: The Complete Book\*](#) 2nd edition, by Hector Garcia-Molina, Jeff Ullman and Jennifer Widom. ISBN: 978-0131873254, Prentice Hall, 2008.
- **Recommended references:**
  - [\*Database Management Systems\*](#) 3rd edition, by Raghu Ramakrishnan and Johannes Gehrke. ISBN: 978-0072465631, McGraw-Hill, 2002
  - [\*Database System Concepts\*](#) 6th edition, by Avi Silberschatz, Henry Korth and S. Sudarshan. ISBN: 978-0073523321, McGraw-Hill, 2010
  - [\*Fundamentals of Database Systems\*](#) 7th edition, by Ramez Elmasri, and Shamkant Navathe. ISBN: 978-0133970777, Pearson, 2016

#### Course Format:

The course is lecture-based with two **examinations** (midterm and final). There are **individual assignments** and a **group-level programming project**. In order to encourage attending classes and participating in discussions, there will be several **in-class quizzes** for students.

- **Lectures and Class Participation:** We strongly encourage (and appreciate!) students to attend classes, because effective lectures rely on students' participation to raise questions and contribute in discussions. Although we probably will have a large class, we will strive to maintain interactive class discussions if possible. We will provide lecture notes before class, which will be posted on the [Schedule](#) page.
- **Questions:** We encourage students discussing their questions and problems first with their group peers and classmates. This way, you can get immediate help and also learn to communicate "professionally" with your peers. In any case for more thorough discussion, come to the office hours of TA's and the instructor's. Any announcement will be posted on the [Announcement](#) page. Make sure to check it frequently enough to stay informed.

- **Assignment:** There will be a few written [assignments](#) spaced out over the course of the semester. All the assignments should be done individually by the students. Assignments should be submitted before the class begins on the due dates.
- **Projects:** There will be a semester-long [project](#), which involves significant database application programming. The project will be structured with several milestones due in the course of the semester, leading to a demo and write-up near the end of the semester.

#### **General Policy:**

- **University Attendance Policy:** Excused absences include documented illness, deaths in the family and other documented crises, call to active military duty or jury duty, religious holy days, and official University activities. These absences will be accommodated in a way that does not arbitrarily penalize students who have a valid excuse. Consideration will also be given to students whose dependent children experience serious illness.
- **Academic Honor Policy:** The Florida State University Academic Honor Policy outlines the University's expectations for the integrity of students' academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process. Students are responsible for reading the Academic Honor Policy and for living up to their pledge to "...be honest and truthful and... [to] strive for personal and institutional integrity at Florida State University." (Florida State University Academic Honor Policy, found [here](#))
- **Syllabus Change Policy:** Except for changes that substantially affect implementation of the evaluation (grading) statement, this syllabus is a guide for the course and is subject to change with advance notice.
- **Assignment/Project Policy:** You are allowed to discuss written assignments, however, any such discussion must be clearly acknowledged on the submitted solution. Your solution should be stapled together and neatly prepared. The programming project will be carried out in a group-based fashion with one or two students involved. No inter-team collaboration is allowed;
- **Class Attendance Policy:** You are bound to attend all lectures unless notifying the instructor in advance with reasonable excuses.
- **Regrading Policy:** Any regrading request should be submitted to the instructor or the TA(s) within one week since the graded deliverables are handed out to the students.

#### **Collaboration/Academic Honesty:**

All course participants must adhere to the academic honor code of FSU which is available in the student handbook. All instances of academic dishonesty will be reported to the university. Every student must write his/her own homework/code (unless you are in the same group for the programming project). Showing your code or homework solutions to others is a violation of academic honesty. It is your responsibility to ensure that others cannot access your code or homework solutions. Consulting related textbooks, papers and information available on Internet for your coding assignment and homework is fine. However, copying a large portion of such information will be considered as academic dishonesty. If you borrow a small piece of any such information, please acknowledge that in your assignment. Please see the following web site for a complete explanation of the [Academic Honor Code](#).

#### **Late Submission Policy:**

- Late assignments will not ordinarily be accepted. If, for some compelling reason, you cannot hand in an assignment on time, please contact the TA or instructor as far in advance as possible. Written assignments or project deliverables are due at the beginning of a class, you should hand them in at the beginning of the class;
- No credit will be given to late programming projects;
- No make-up exams (except under extremely unusual circumstances).

### **Students with Disability:**

**Americans With Disabilities Act:** Students with disabilities needing academic accommodation should: (1) register with and provide documentation to the [Student Disability Resource Center](#); (2) bring a letter to the instructor indicating the need for accommodation and what type. This syllabus and other class materials are available in alternative format upon request. For more information about services available to FSU students with disabilities, contact the: Student Disability Resource Center, 874 Traditions Way, 108 Student Services Building, Florida State University, Tallahassee, FL 32306-4167, (850) 644-9566 (voice), (850) 644-8504 (TDD), [sdrc@admin.fsu.edu](mailto:sdrc@admin.fsu.edu), <http://www.disabilitycenter.fsu.edu>.

### **Course Grading Policy:**

The course grade will break down as follows,

- Assignment: 20%;
- Project: 30%;
- Midterm exam: 10%;
- Final exam: 35%;
- Quizzes: 5%.

Any regrading request should be submitted to the instructor or the TA(s) within one week since the graded deliverables are handed out to the students.

And your final grade will be assigned as follows,

- A: 100 - 90;      A-: 90 - 85;
- B+: 85 - 80;      B: 80 - 70;      B-: 70 - 65;
- C: 65 - 60;      D: 60 - 50;
- F: 50 - 0.

This table indicates minimum guaranteed grades. Under certain limited circumstances (e.g., an unreasonably hard exam), we may select more generous ranges or scale the scores to adjust.

### **Resources:**

#### Relational Database

- [MySQL](#)
- [Oracle](#)
- [IBM DB2](#)
- [Microsoft SQL Server](#)

#### Design and Drawing Tool

- [Database Designer](#)
- [Sequel Pro](#)
- [Microsoft Office \(Visio, Word\)](#)
- [Gliffy](#) (Recommended by Mike Dunton)

#### Programming Reference

- [SQL tutorial and examples](#)
- [PHP tutorial](#)
- [XAMPP](#)
- [Learning PHP, MySQL, Javascript. O' Reilly.](#)

#### Courses in Other Universities

- [Stanford: Introduction to Database Systems](#)
- [CMU: Database Applications](#)
- [UIUC: Database Systems](#)
- [MIT: Database Systems](#)