

# Database Systems–Spring 2018

CSCI 3410

Clément Aubert

November 14, 2018

## Quick Facts

- Class meets Mon. & Wed., 11:30 AM–12:45 PM in AH E-157,
- The instructor can be reached at [caubert@augusta.edu](mailto:caubert@augusta.edu), his office (AH E-128) hours are Mon. 2:30 PM–4:30 PM & Thu. 3:00 PM–5:00 PM
- You can download this syllabus.

## Quick Links

[Homeworks](#) • [Snippets of code](#) • [Shared Document](#) • [Planned schedule](#)

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## Presentation

### Course Description

This course offers an introduction to database systems as a key concept in information management. The course covers logical and physical database organization, data models, file structures, indexing, hashing, query optimization, and design issues. This course will cover the design and implementation of databases.

### Learning Outcomes

Upon successful completion of this class, the student will:

- Understand key concepts in databases, such as the entity-relationship model, the relational database model and constraints, as well as relational algebra and relational calculus.
- Be able to design databases by mapping ER relations, use SQL and SQL programming, as well as stored procedures and triggers.
- Understand advanced topics such as normalization, hashing techniques and data storage mechanisms.

**Format and Procedures**

Lectures are devoted to general explanations of the concepts and ideas underlying the topic at stake. All practical work, coding, programming, testing, etc. will be carried at home.

Homework assignments will assist the students in making sure they understand classes expectations and the content of the lecture, as well as to practice their coding and problem-solving skills. Additional resources will be used on a regular basis. The progression of the students will be regularly tested and assessed through quizzes and tests. Active and relevant participation during the lectures is appreciated.

**Teaching Philosophy**

It is our mutual interest for you to succeed: I love to share knowledge and to expand it by helping students, and students want to gain a useful and agreeable experience that will prove valuable in their future endeavors. To this end, here is:

**What I'm expecting from you**

- Check the announcements periodically on the class website.
- Read this entire syllabus carefully.
- Participate actively in all class discussions.
- Do the homeworks wisely: read your notes before starting the homework assignment, make sure you understand it completely before considering it done.
- Come prepared and on time to classes, exams and quizzes.

**What you should expect from me:**

- Clear and accessible lectures.
- Fair and impartial grading.
- Availability, during office hours, by appointment, and by email.
- Open hear to your suggestions to improve this class.
- Dedication to your success!

**Course Requirements**

- Attendance is not mandatory. However, if you come to class, come on time, and stay until the end of the lecture: late arrival and early departure won't be tolerated. This includes class sessions where quiz are taken, but not class period where exams are taken.
- No laptop or similar electronic device is allowed during the lectures. This policy will help you to improve your grades, increase memorization and to be more respectful of your fellow students.

- You are responsible for all course material, whether or not you attend lectures or do the assigned reading or coursework.
- It is the student's responsibility to initiate a withdrawal before midterm (i.e., Fri, March 2nd), but I reserve the right to withdraw a student that missed 10% of class time and half of the quizzes and tests.
- A student not withdrawn from a course who stops attending class (or who never attends class) is subject to receiving a grade of **WF** or **F**.
- All coursework is individual coursework.
- Any student missing the final exam without an documented excuse (brought to me or to the dean of Student Life) or who has not taken action to withdraw will receive a grade of **F**. In case of an documented emergency at the time of the final, the student may be allowed to receive a grade of **I**.
- No make up quizzes or exam will be allowed. In case of a documented excuse (cf. previous item), the weight of the missed exam or quiz will be placed onto the final's weight.

## Practical Information

### Time and Place

Monday and Wednesday, 11:30 AM–12:45 PM in Algood Hall, E-157

### Instructor

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<i>Name</i>	Dr. Clément Aubert
<i>Office</i>	Algood Hall E-128
<i>Phone</i>	706-737-1566
<i>Email</i>	caubert@augusta.edu
<i>Office Hours</i>	Monday 2:30 PM–4:30 PM, Thursday 3:00 PM–5:00 PM and by appointment
<i>Institute</i>	School of Computer and Cyber Sciences vice Hull College of Business

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Feel free to drop by when I'm in my office, but be aware that I may be busy, too: if you have multiple questions or if your question requires more than 5 minutes to be exposed and answered, please arrange an appointment with me.

### Getting Help

I am committed to follow the principles of Universal design and try to construct a welcoming environment for every student. I should be your first point of entry, but getting help from other persons is perfectly acceptable and encouraged if you feel the need to.

- For tutoring resources, consult the tutoring center.

- The Testing & Disability Services can help you—and me!—accommodate this class.
- The Student Counseling & Psychological Services (or “SCAPS”) is here to “assist students with a variety of personal, developmental, and mental health concerns.”

For tutoring resources, consult the tutoring center.

## Grades

Students will be evaluated using three different types of evaluation:

1. Seven homework assignments will be given during the course of the semester: they are not expected to be handed back, and won’t be graded, but seven quizzes with questions taken or inspired from those assignments will be given. Those quizzes happen (almost always) every other Wednesday (see the planned schedule), are closed book and timed (5–20 min.).
2. There will be two in-class exams, held during the regular class periods on Wednesday, 14th February, and Wednesday, 28th March.
3. The final exam will take place during the exam period, i.e., Wednesday, 2th May, 11:00 AM–1:00 PM, in AH E-157.

Your grade will be computed as follows:

Quizzes ( $\times 7$ )	20%
In-class Tests ( $\times 2$ )	40%
Final Exam	40%

using the following course grade scale:

Below 65	65–70	70–79	80–89	90–100
<b>F</b>	<b>D</b>	<b>C</b>	<b>B</b>	<b>A</b>

## Planned Course Schedule

Week	Date	Topic	Chapter	Note
1	01/08	Syllabus, Introduction	1–1.3.4	Homework #1 released
2	01/15	Relational Data Model and Constraints	3	01/15: MLK day
3	01/22	Continued	-	01/24: <b>Quiz #1</b> , Homework #2 released
4	01/29	SQL	4–4.4, 5.1–5.1.3, 5.1.7, 5.2, 5.4	-

Week	Date	Topic	Chapter	Note
5	02/05	Continued	-	02/07: <b>Quiz #2</b> , Homework #3 released
6	02/12	Review Session	-	02/14: <b>Exam #1</b>
7	02/19	Entity-Relationship Model	7–7.7, 7.9–7.10	02/21: <b>Quiz #3</b> , Homework #4 released
8	02/26	Database Design by mapping ER to relations	9–9.1	-
9	03/05	Normalization	15–15.4	03/07: <b>Quiz #4</b> , Homework #5 released
10	03/12	Database Design and UML diagrams	7.8, 10.3	-
11	03/19	Disk Storage and Hashing	17.4, 17.6–17.8.3	03/21: <b>Quiz #5</b> , Homework #6 released
12	03/26	Review Session	-	03/28: <b>Exam #2</b>
13	04/02	-	-	Spring Break
14	04/09	Introduction to SQL Programming Using Java	13.3.2	04/11: <b>Quiz #6</b> , Homework #7 released
15	04/16	Continued	-	-
16	04/23	Introduction to Database Security	24.1–24.4	04/25: <b>Quiz #7</b>
17	04/30	-	-	04/30 is end of class, 05/02, 11:00 AM–1:00 PM, in AH E-157: <b>Final</b>

*This schedule is subject to change and enhancements, but provide an indication of the pace, assignments, and major deadlines that you will need to plan for the semester.*

## Additional Material and Resources

### Textbook

Textbook is optional, but strongly recommended. You can use either

*Fundamentals of Database Systems* (6th Edition) by Elmasri and Navathe, Pearson, 2010. ISBN-10: 0136086209. ISBN-13: 978-0136086208.

or

*Fundamentals of Database Systems* (7th Edition) by Elmasri and Navathe, Pearson, 2015. ISBN-10: 0133970779. ISBN-13: 978-0133970777.

The chapters in the schedule above are for the 6th edition, for the 7th edition, you should refer to the following table of correspondence:

Topic	6th edition	7th edition
Introduction	1–1.3.4	1–1.3.4
Relational Data Model and Constraints	3	5
SQL	4–4.4, 5.1–5.1.3, 5.1.7, 5.2, 5.4	6–6.4, 7.1–7.1.3, 7.1.7, 7.2, 7.4
Entity-Relationship Model	7–7.7, 7.9–7.10	3–3.7, 3.9, 3.11
Database Design by mapping ER to relations	9–9.1	9–9.1
Normalization	15–15.4	14–14.4
Database Design and UML diagrams	7.8, 10.3	3.8, <i>Chapter removed</i>
Disk Storage and Hashing	17.4, 17.6–17.8.3	16.4, 16.6–16.8.3
Introduction to SQL Programming	13.3.2	10.3.2
Introduction to Database Security	24.1–24.4	30.1–30.4

The textbook can be purchased through JagStore, select

- JAGSTORE - 2018 SPRING-AUGUSTA UNIVERSITY
  - CSCI-CSCI
    - \* 3410
      - A-Aubert, Clement

### Online Resources

- Reese Library's Cyber Resource Center
- Spurious Correlations
- On SQL injections:
  - SQL Injection Cheat Sheet
  - SQL Injection Prevention Cheat Sheet
  - sqlmap

### Homework Assignments

Check the schedule for more information.

- Homework #1
- Homework #2
- Homework #3
- Homework #4
- Homework #5
- Homework #6
- Homework #7

**Snippets of Code**

- 2018\_29\_01, First Commands: Commands, Webpage, Document
- 2018\_01\_30, Constraints: Commands, Webpage, Document
- 2018\_02\_05, Creation, Population and Conditions: Commands, Webpage, Document
- 2018\_02\_07, Last Commands: Commands, Webpage, Document

**Documents Shared in Class**

Date	Title
03/15	Study Guide    webpage, printable document

**Legal and Recommendations****Academic Integrity**

The University's Student Code of Conduct, the student's manual, as well as the academic regulations and all applicable policies are supposed to be known by the students and will be enforced.

Section 5.2, Academic Conduct of the student's manual defines precisely what kind of collaborations are acceptable. As long as you don't lie, cheat, plagiarize, assist others or being assisted by others without authorization, we should not need any of that. If you are unsure about whether or not certain kinds of collaboration are permissible, please ask me.

**Universal Design**

I am committed to the founding principles of Universal Design, and to make my lecture accessible to every one. Concretely, that means that I'm not requiring you to use a particular Operating System, that I always try to give the information repeatedly, and using multiple channels, that I am available over the phone, email, or in my office. If you are registered with Testing and Disability Services, please see me at your earlier convenience to discuss accommodations.

**Campus Carry Legislation**

Please be aware of the USG guidance on House Bill 280.

**Miscellaneous**

- Reservation of rights: I reserve the right to change this syllabus without limitation and without prior notice. If I do substantially modify any item or policy, I will notify you during a lecture, or send an e-mail to your [augusta.edu](mailto:augusta.edu) e-mail account.

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