

Boston University  
College of Arts and Sciences  
Computer Science Department  
**CAS CS 460: Introduction to Database Systems**  
Spring 2021

**Instructor:** Prof. George Kollios, [gkollios@cs.bu.edu](mailto:gkollios@cs.bu.edu), phone 617-353-8928.

**Office Hours:** Tue 11:00 am-12:30 pm and Wed 10:00-11:00 am, or by appointment (the best way to reach me is via email.)

**Teaching Fellows:** Zichen Zhu, [zczhu@bu.edu](mailto:zczhu@bu.edu) and Lina Qiu, [qlina@bu.edu](mailto:qlina@bu.edu).

**Office Hours:** Lina: Mon and Wed 11:00am-12:00 noon.

Zichen: Tue and Thu 3:30-4:30 pm. More information on Piazza page.

**CS460 Course Description:** Introduction to database management systems. Examines entity-relationship and relational data models; commercial relational query languages: SQL and relational algebra; file organization, indexing and hashing, query optimization, transaction processing, concurrency control and recovery, integrity, and security. Finally, we will cover new trends in data management including Big Data and NoSQL databases and data management on the Cloud.

**Prerequisites:** CAS CS 112. Working knowledge of Python or Java programming and data structures. CS 350 is recommended.

**Class Home Page:** <http://www.cs.bu.edu/fac/gkollios/cs460s21/>

**Class Piazza Page:** <https://piazza.com/bu/spring2021/cs460/>

All class assignments, schedules, and lecture notes will be posted on Piazza page. Gradescope will be used for assignment submission and grading.

**Time and Place:** Tue and Thu 12:30-1:45PM in KCB 101.

**Required Textbook:** Raghu Ramakrishnan and Johannes Gehrke, "Database Management Systems", McGraw-Hill, Third Edition. 2002. ISBN: 0-07-246563-8.

**Grading Policy:** The course grade will break down as follows.

	CS460
Written Assignments	25%
Programming Assignments	25%
Midterm	20%
Final Exam	30%

**Important Dates:** *Midterm Exam:* March 11, 2021 (tentative), *Final Exam:* May 4, 2021.

**Collaboration/Academic Honesty:** All course participants must adhere to the College of Arts and Sciences Academic Conduct Code. All instances of academic **dishonesty** will be reported to the academic conduct committee.

Students can read the Academic Conduct Code here:

<https://www.bu.edu/academics/policies/academic-conduct-code/>

**Late Policy – Make up exams:** Late written assignments will not ordinarily be accepted. If, for some compelling reason, you cannot submit an assignment on time, please contact me as far in advance as possible.

Late programming projects will be levied a late penalty of 10% per day for up to three (3) days. After three days, no credit will be given.

No make-up exams (except under extremely unusual circumstances).

### Tentative Course Schedule

Week#	Topics	Readings
1	Introduction	Chapter 1
2	ER-Model; Relational Model and Algebra	Chapters 2, 3, 4
3	SQL	Chapter 5
4	Integrity and Security	Chapters 5, 21
5	DB Design	Chapter 19
6	Normalization and Transactions	Chapters 19, 16
7	Storage and Files	Chapter 9
8	<b>Midterm Exam</b>	
9	Indexing and Hashing	Chapters 10, 11
10	Advanced Indexing	Chapter 28
11	Query Processing and Optimization	Chapters 12, 13
12	Query Optimization and Transactions	Chapters 14, 15, 16
13	Concurrency Control and Recovery	Chapters 17, 18
14	NoSQL and Big Data	Chapter 25
15	Cloud and Distributed Databases	Chapters 22