

600.315/415 - DATABASE SYSTEMS

Fall 2009 Syllabus

Instructor: Prof. David Yarowsky **TAs:** TBA
CSEB 324
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Meeting Time: Tu,Th: 3:00-4:15 PM

Classroom: CSEB B17

Office Hours: Instructor - We 3-4, Tuesday/Thursday after class and by appointment.
TA - TBA, special review sections, and by appointment.

Required Textbook:

- A. Silberschatz, H. Korth and S. Sudarshan, *Database System Concepts*, 5th Edition, McGraw Hill, 2005. ISBN: 0-07-295886-3 (earlier editions acceptable).

Other Potentially Useful Textbooks:

- R. Ramakrishnan and J. Gehrke, *Database Management Systems*, 3rd Edition. McGraw Hill, 2003. ISBN: 0-07-246563-8.
- L. Wall, S. Potter and R. Schwartz, *Programming Perl*, O'Reilly. ISBN: 1-56592-149-6 (strongly recommended for many final projects).

The class will explore both formal and practical issues in database systems. Hands-on database design and implementation using the MySQL DBMS will be an important component of the course.

Course Requirements: Final grades will be based on the following (subject to change):

Class Participation:	5%
Homeworks (4):	26%
Midterm:	19%
Final Exam:	25%
Final Project:	25%

Lateness Policy:

One homework assignment may be handed in up to 5 days late without penalty. No other late homeworks will be accepted. Final projects handed in late will receive a penalty of 10% for every day late.

600.315 vs. 600.415:

600.315/415 will share common lectures. They will differ primarily in terms of assignments and grading. Homeworks in 600.415 will include 1 or more additional problems and the final project will include additional component(s) not required for 600.315. Exams will differ somewhat and will be graded on a different scale. Nevertheless, 600.415 should be manageable by advanced undergraduates and upperclass students are encouraged to enroll.

Final Projects:

Students will be able to select final projects of interest to them from a fairly diverse set of options. Details will be provided in class. Students may work in teams of 1 or 2 people. A project proposal will be due in early November, including a detailed system specification and design. The final project submission, including a full database implementation in MySQL, will be due shortly after the end of classes in December. For most projects, students will be required to populate and test their implemented database design with substantial quantities of *real world data* extracted from the world wide web or other online sources.

Computer Science Academic Integrity Code:

Academic honesty is required in all work you submit to be graded. You must solve all homework and programming assignments entirely on your own, unless group work is specified in writing. This means you must not show your program code, problem solutions, or work to other students. However, you may discuss assignment specifications with others in the class to be sure you understand what is required by the assignment. If you use fragments of source code from sources other than your text (such as on-line resources), you must put a reference to that effect in your homework submission. Falsifying program output or results is prohibited. Please see your professor if there are any questions about what is permissible. Students who cheat will suffer a serious course grade penalty in addition to being reported to university officials. You must abide by JHU's Ethics Code, available at <http://jhunix.hcf.jhu.edu/~ethicsbd>.

Preliminary Class Schedule (subject to change):

Date	Topic	RG 2e	KS 5e	KS 4e	KS 3e
Th. 9/3	Introduction	–	–	–	–
Tu. 9/8	Overview of database systems and data modeling	1	1	1	1
Th. 9/10	Entity-Relationship data model	2	6	2	2
Tu. 9/15	Relational data model	3	2	3	3
Th. 9/17	Relational algebra	4	2	3	3
Tu. 9/22	Relational algebra and relational calculus	4	2,5	3	3
Th. 9/24	SQL	5	3	4	4
Tu. 9/29	Advanced SQL	5	4	4	4
Th. 9/30	Relational database administration and additional topics	hnd	hnd	hnd	hnd
Tu. 10/6	QBE (Query by Example), Views	6	5	5	5
Th. 10/8	Relational database design, integrity constraints	15-16	7	7	6
Tu. 10/15	Relational database design, integrity constraints	15,16	7	7	7
Th. 10/17	Physical organization and data structures	7-11	11,12	12	10,11
Tu. 10/20	Topic TBA	hnd	hnd	hnd	hnd
Th. 10/22	MIDTERM (tentative date)				
Tu. 10/25	Query processing and optimization	12-14	13	13	12
Th. 10/27	Query processing and optimization	12-14	14	14	12
Tu. 10/29	Embedded SQL; PL-SQL/stored procedures	hnd	hnd	hnd	hnd
Th. 10/31	Transaction processing and concurrency	18,19	15,16	15,16	13,14
Tu. 11/10	Database recovery systems	17	17	17	15
Th. 11/12	Distributed databases	21	22	19	18
Tu. 11/17	Object-oriented databases	25	9	8,9	8,9
Th. 11/19	Database security	17	8	6	19
Tu. 11/24	WWW-based technologies and database interfaces; XML	10,21	10,19	22	21
Th. 11/26	THANKSGIVING				
Tu. 12/1	Data warehousing, data mining, multimedia databases	23-26	18,24	22,23	21
Th. 12/3	Natural language interfaces and future directions	hnd	hnd	hnd	hnd
Thu 12/17	Final Examination 6-9 PM				

RG = Ramakrishnan and Gehrke

KS = Korth and Silberschatz

Students are responsible for determining if they have an scheduled exam conflict with another course on 12/17 6-9 PM. In this very unlikely event, given that this is exclusively the official slot for TuTh3PM classes, students should notify both instructors as soon as possible, and no later than 11/10/09, so the scheduling conflict can be resolved.