

Syllabus

CS 365: Advanced Database Systems, Spring 2008

Class hours: Tu, Th, 1:30pm - 2:45pm

Classroom: CM 14

Class home page: <http://users.ipfw.edu/yooj/class/cs365>

Instructor: Dr. Jin Soung Yoo, Assistant Professor

Office Hours: ET125, Tu/Th. 12:30 pm - 1:30 pm

Phone: 481-6946, **Email:** yooj@ipfw.edu

Prerequisite: CS 364 – Introduction to Database Systems.

Course Description: A database application development with a case study, database index structures, query evaluation, security, multidimensional databases and data mining for decision support, information retrieval and XML data query, and emerging database trends (spatial databases, biological databases, etc.).

Course Goal and Learning Outcomes

The goal of this course is to practice a database application development, and to introduce advanced database topics, and emerging database trends. Specific learning outcomes are listed below. The letters in parentheses refer to ABET Program Learning Outcomes.

1. Develop a database application with a case study problem
 - 1.1. Conceptual database design using an ERD tool. (b, c, d, i, k)
 - 1.2. Logical database design using SQL. (a, c, d, i, k)
 - 1.3. Physical database design. (a, b, c, d, j, k)
 - 1.4. Implementation using a database development tool (a, c, d, i, k)
 - 1.5. Present the results of the team project. (c, d, f)
2. Understand index structures and query evaluation. (a, j)
3. Learn database security mechanism (a)
4. Learn multidimensional databases for decision support. (a, b)
5. Learn major data mining techniques. (a, b, h, j)
6. Learn information retrieval and XML data query (a, h)
7. Identify emerging database trends (spatial databases, biological databases, etc.) (a, b, h)

Text Book: "Database Management Systems", Raghu Ramakrishnan, Johannes Gehrke, McGraw-Hill Science, ISBN 0072465638, 2002

References:

[Oracle SQL Quick Reference](#)

[Oracle, SQL reference from Stanford University database group,](#)
[SQL tutorial \(u c davis\)](#)

[Oracle Forms Developer Guide](#)

[CASE tool \(MS Visio\) Quick Reference](#)

Additional reading materials will be posted in the class website.

Term Project and Homeworks: There are one term project and three homeworks you must complete, some of which may require programming. The project has two mid reports and one final report.

Late Submission Policy: Assignments (homeworks and project reports) must be handed in at the beginning of class on their due date for full credit. A penalty of 30% will be deducted from score for the first 24-hour period your assignment is late. A penalty of 70% will be deducted from score for \geq 24-hour period. Weekend days will be counted. For assignments, you are encouraged to type your answers.

Examinations: There are two examinations, a midterm and a final exam. Students are responsible for all material covered in lectures. For make-up exams, students should discuss with instructor in the first week of the semester.

Grading: The weighting scheme used for grading is: Examinations-40% (each exam 20%), Project-36% (each mid report 6%, final report 10% and each presentation 7%) and Homeworks - 24% (each 8%). There are two necessary conditions for passing this class: 1) Submission of all assignments including homeworks and project reports, and 2) Presentations of your project results. Using the above weights, a total of 90% and up will earn you 'A', 80% and up 'B', 65% and up 'C', 50% and up at least a 'D'. The instructor reserves the right to change the weights during the course of the semester.

Attendance Policy: Attendance is a University requirement and I expect you to attend every class. I will be taking attendance and your grade may be adversely affected by absences. In the event you cannot attend class you are responsible for obtaining any course-related information or materials.

Academic Integrity: Project will be done by a team of two students. But other course work must represent your individual effort. You are welcome and encouraged to discuss course material and general approaches to problems with classmates, and the instructor, but you should never misrepresent someone else's work as your own. It is also your responsibility to protect your work from unauthorized access. Collaboration on homework or exams is cheating and grounds for failing the course. Any student caught cheating will fail the course and result in the placement of a memo describing the infraction in the CS Department's files. For non-majors, the memo will be forwarded to the student's major department.

Accommodations for Students with Disabilities: If you have a disability and need assistance, special arrangements can be made to accommodate most needs. Contact the Director of Services for Students with Disabilities (Walb Union, Room 113, telephone number 481-6658) as soon as possible to work out the details. Once the Director has provided you with a letter attesting to your needs for modification, bring the letter to me. For more information, please visit the web site for SSD at <http://www.ipfw.edu/ssd/>

Help from the Center for Academic Support and Advancement (CASA) : The SPOT Course-Specific Tutoring: Make your study time not only more effective, but also more efficient by signing up for free tutoring available in the SPOT in Kettler G21 (next door to the Writing Center). You are entitled to 2 free hours per week of one-to-one, course-specific help in understanding concepts, practicing the application or explanation of material being learned, and developing effective test-taking strategies. Make all appointments online through TutorTrac at www.ipfw.edu/casa. If you don't see a tutor available for your class, contact us in Kettler G21!

Drop-in tutoring is also available for math (schedule on website) and a few other subjects. If you need help with study skills in general, drop by the SPOT to view our self-paced tutorials or make a one-to-one

appointment. Information about STEPS (Student Technology Education ProgramS) classes can be found the CASA website. Also, check with your instructor about whether Supplemental Instruction (group study) is available for this class. Questions? Call 481-5419. SPOT Hours Spring 2008: Monday-Thursday 8 a.m. to 8 p.m.; Friday 8 a.m. to 4 p.m.

The WRITING CENTER: Save time and write better papers or presentations for any class through free one-to-one or small group consultations in The Writing Center, Kettler G19 (next door to the SPOT). Bring assignments, questions, ideas, and a draft (if you have one). Consultants can help you get started, write more clearly, revise, edit, and cite sources responsibly. Come as you begin and as you revise. Drop-ins are welcome if time is available, but appointments, made online through TutorTrac, receive preference. For TutorTrac, online consulting, and resources to make your writing process easier, go to www.ipfw.edu/casa/writing. Questions? Call 481-5740. Writing Center hours Spring 2008: M-Th 10 a.m. to 6 p.m.; F 10 a.m. to 2 p.m.; Su 1 to 5 p.m.

Others: It is not allowed to use cell phones and eating except water in the classroom.

Tentative Schedule: This is the schedule for the class, subject to change as circumstances dictate. A updated schedule is available in class web page, <http://users.ipfw.edu/yooj/class/cs365/schedule.htm> The schedule indicates the concepts and material to be covered in each week under the column labeled "Topics". Assignments are listed on the day they are *due*, and must be turned in at the beginning of class on that date.

Date	Topics	Chapters	Assignment Dues
Jan 15	Course Overview	Ch 1	
Jan 17	DB Application Development : Conceptual Design	Ch 2	
Jan 22	DB Application Development : Logical Design	Ch 3	
Jan 24		Ch 5	
Jan 29	Project Presentation 1		Project Report 1
Jan 31			
Feb 5	DB Application Development : Physical Design	Ch 8, 20	Homework 1
Feb 7			
Feb 12	DB Application Development : Oracle Forms		
Feb 14			
Feb 19	Index Structures	Ch 10, 11	Project Report 2
Feb 21			
Feb 26	Query Evaluation	Ch 12	
Feb 28			
Mar 4	Database Security	Ch 21	Homework 2
Mar 6	Midterm (Mar 5)		
Mar 11	SPRING RECESS		
Mar 13			
Mar 18	Multidimensional Databases	Ch 25	
Mar 20			
Mar 25	Data Mining	Ch 26	
Mar 27			
Apr 1	Data Mining	Ch 26	
Apr 3			Homework 3
Apr 8	Project Presentation 2		
Apr 10			

Apr 15 Apr 17	Information Retrieval and XML Data	Ch 7, 27	Project Final Report
Apr 22 Apr 24	Spatial Databases	Ch 28	
Apr 29 May 1	Biological and other databases	Ch 29	
May 6 May 8	Final (The date depends on the school final schedule.)		

ABET Program Learning Outcomes: The following learning outcomes are defined by ABET, our accrediting agency, for computer science programs.

- (a) An ability to apply knowledge of computing and mathematics appropriate to the discipline
- (b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
- (c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs
- (d) An ability to function effectively on teams to accomplish a common goal
- (e) An understanding of professional, ethical, legal, security and social issues and responsibilities
- (f) An ability to communicate effectively with a range of audiences
- (g) An ability to analyze the local and global impact of computing on individuals, organizations, and society
- (h) Recognition of the need for and an ability to engage in continuing professional development
- (i) An ability to use current techniques, skills, and tools necessary for computing practice.
- (j) An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.
- (k) An ability to apply design and development principles in the construction of software systems of varying complexity.

Welcome to CS365
Jin Soung Yoo