

CIS 444 – Spring 2017

Advanced Database Applications

Instructor: Robert S. Dollinger

Office Hours: Mon, Wed 11:00am-11:50am
Tue, Thu 2:00 p.m.– 2:50 p.m.

Office: B229 Science

Phone: 346-4310

Email: rdolling@uwsp.edu

Administrative Information

Text Rental

Ramakrishnan, Raghu; Gehrke, Johannes. *Database Management Systems - 3rd ed.* McGraw-Hill. New York, NY. 2003.

Website Resources

<http://www.cs.wisc.edu/~dbbook/openAccess/thirdEdition/slides/slides3ed.html>

<http://www.cs.wisc.edu/~dbbook/dbbook.access.html>

Optional Supplemental Texts [Would have to be purchased]

Silberschatz, Abraham; Korth F. Henry; Sudarshan, S; *Database System Concepts – Fifth Edition*, Mc Graw Hill, 2006

Steven Feuerstein *Oracle PL/SQL Programming – Fourth Edition*, O'Reilly, 2005

Elmasri, Ramez; Navathe B. Shamkant. *Fundamentals of Database Systems*, Third Edition, Addison-Wesley, 2000.

D2L

Look for CIS 444 site.

Attendance

Regular attendance is expected. Students are responsible for all materials during their absence.

Grades

Homework Assignments:

- To receive full credit, assignments must be handed in on time.
- **To be acceptable for grading, they must be neat, readable, and professional looking. Assignments that fail to do so will be assigned a score of zero.**
- Assignments are due on assigned dates. No late assignments.
- Missing assignments will receive a grade of 0.

Testing: [No make-up exams will be given]

Weekly classroom assignments.

A comprehensive final.

Thursday, May 18th 12:30-14:30

30%	Quizzes	10%	Extra Work
30%	Labs	10%	Course Participation
30%	Final Exam		

Cut-off percentages

	B+	86.5%	C+	76.5%	D+	66.5%	F	Below 62.5%
A	92.5%	B	82.5%	C	72.5%	D	62.5%	
A-	89.5%	B-	79.5%	C-	69.5%			

*Flexibility in the above grading criteria will be provided by various opportunities for make-up and extra work such that interested and dedicated students may always have the chance of improving their final grade.

Working with DBMSs

The working DBMS is MS SQL Server 2014.

You can choose to work at home as well by installing a free release of of the above DBMS or by remotely connecting to a UWSP workstation. Server name and student's accounts will be communicated in the classroom. Courtesy of the instructor, some step by step procedures are available to help setting up a working environment at home. However, this is a personal option of each student and the CIS Department is not responsible for any failure in this respect.

Course Objectives

Understand advanced database management and application development techniques.

Course Topics

Server side advanced database programming (MSSQL):

- control flow statements;
- server cursors;
- stored procedures;
- triggers;

Database query optimization techniques:

- rewriting queries;
- using database table indexes;
- forcing join reordering.

Data warehousing and OLAP techniques:

- redesigning the schema;
- multi-dimensional model;
- cubes and cuboids;
- special query techniques;

XML Support in Modern DBMSs (MSSQL 2014)

- the XML Data type and its properties (un-typed and typed XML, impact of namespaces);
- FOR XML Clause (RAW, AUTO, EXPLICIT, PATH)
- OPENXML;
- XPath;
- XQuery;

LINQ

- LINQ to Objects;
- LINQ to SQL;
- LINQ to XML;

MSSQL 2014 and .NET Integration:

- developing CLR stored procedures;
- developing CLR functions;
- developing CLR types.

Optional Topics (time permits):

Concurrency control:

- insuring safety and consistency of multiple simultaneous user accesses;

Transaction processing:

- supporting e-commerce applications;

Database backup and recovery:

- database logs and check-pointing;
- rebuilding databases after catastrophic events;

Database administration and security:

- users;
- roles;
- authentication;
- grant and revoke privileges;
- SQL vulnerabilities;

Office Hours Policy

Preferably, you should come during the office hours as scheduled.

However, my office door is open whenever I'm in, and you can drop by any time with questions or for getting help.

Email

You can use email for shorter, immediate and specific questions. Good chance to get a response the same day.

Don't use email for asking favors or announcing that you are sick!!!

Academic Misconduct Policy

See: <http://www.uwsp.edu/dos/Documents/CommunityRights.pdf#page=11>

Student Rights and Responsibilities

See: <http://www.uwsp.edu/dos/Documents/CommunityRights.pdf>.

In an Emergency:

- In the event of a medical emergency, call 911 or use red emergency phone located to the right of the pendulum in the 2nd floor hallway of the Science Building. Offer assistance if trained and willing to do so. Guide emergency responders to victim.
- In the event of a tornado warning, proceed to the lowest level interior room without window exposure on the first floor lavatory in the Science Building. If time or space do not allow, go to A224 or A225 Science Building or remain in the hallways around those classrooms. See <http://www.uwsp.edu/rmgt/Pages/em/procedures/other/floor-plans.aspx> for floor plans showing severe weather shelters on campus. Avoid wide-span rooms and buildings.
- In the event of a fire alarm, evacuate the building in a calm manner. Meet at the far end of Lot X where the driveway enters Lot X. Notify instructor or emergency command personnel of any missing individuals.
- Active Shooter – Run/Escape, Hide, Fight. If trapped hide, lock doors, turn off lights, spread out and remain quiet. Follow instructions of emergency responders.
- Watch the Active Shooter video at: <https://campus.uwsp.edu/sites/rmgt/campus/SitePages/Shots%20Fired%20-%20Lightning%20Strikes.aspx>
- Watch the Preventing Violence video at: <https://campus.uwsp.edu/sites/rmgt/campus/SitePages/Flashpoint%20on%20Campus.aspx>
- See UW-Stevens Point Emergency Management Plan at www.uwsp.edu/rmgt for details on all emergency response at UW-Stevens Point.