

ISQA 4300/8306 DATABASE ADMINISTRATION
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General
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### ***Course and instructor identification***

Instructor:	Dr. Peter Wolcott
Office:	PKI 177E
Office hours:	Mon/Wed 3-4pm. Or anytime I'm in my office. Or, by arrangement.
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Section:	ISQA 4300/8306-860
Meeting time:	Internet mediated
Course site:	<a href="https://canvas.unomaha.edu/">https://canvas.unomaha.edu/</a>

### ***Course description***

This course is designed to give students an applied, practical introduction to database administration. Students will gain an understanding of the functioning of a database management system and its relationship to the computing environment in which it runs. They will learn the concepts, principles, and techniques necessary to carry out such functions as database object creation, storage management and capacity planning, performance tuning, backup and recovery, and security management. The current offering of this course will use Oracle as a platform for class instruction and assignments.

### ***Course objectives***

After taking this course you will, among other things, be able to

- understand the roles, issues, and tasks associated with the database administration function
- understand computer system and DBMS architecture and how the DBMS stores and maintains data, executes queries, and performs other data management tasks.
- Provision an Oracle server in the cloud (Amazon AWS)
- create a variety of database objects, such as tablespaces, indexes, and user objects
- plan and implement the physical organization of a database
- understand and use the system catalog in a variety of database administration tasks
- gather, interpret, and act on database statistics to monitor database activity and tune for performance
- plan and execute backup and recovery activities
- secure the database and manage users
- Provision an Oracle server on Amazon AWS

## **Course prerequisites**

ISQA 3310 - Managing the Database Environment, or CSCI 4850 - Database Management Systems, or ISQA 8050 – Data Organization and Storage

## **Textbook**

1. [Watson] Watson, John, **OCA Oracle Database 12c: Installation and Administration Exam Guide**, McGraw Hill, 2014. ISBN: 978-0-07-182923-7
2. Documentation on Oracle 12c is available from Oracle's website:  
<http://docs.oracle.com/database/122/index.htm>
3. Documentation on Oracle 19c is also available:  
<https://docs.oracle.com/en/database/oracle/oracle-database/19/index.html>

## **Technology**

Since this is an Internet mediated course, you will need to install, or have access to, the following pieces of technology.

1. A tool such as SQL Developer (Oracle), TOAD, or other 3<sup>rd</sup> party tool. SQL Developer is a part of the Oracle client installation, or you may download it separately. Details may be found in Canvas.
2. You will be setting up and configuring an Oracle server on Amazon AWS. There are a number of tools that you will use that will be explained later in the class.

## **On-line Course Considerations or Why is this an -860 rather than an -850 section?**

This class is registered as an -860 *partially online* course. The reason that it is not considered a *fully online* course is that the midterm and final exams will be taken in class, with paper & pencil. Since I cannot count on all students having the same timeslot available, I will be offering the exams in at least two sittings.

Since we will not be meeting face-to-face on a regular basis, yet active student participation is very important for learning, students will be required to participate on-line each week. Some of this interaction will be in a small group setting in which groups of 3-4 students may discuss or research particular issues. If students so desire, I will also have weekly on-line, synchronous meetings / office hours where we will be able to discuss topics, have some Q&A, work additional problems, look at current developments in database administration, etc. You may earn participation credit by attending such meetings as well.

## Policies

### Academic Integrity

#### The ISQA Department's Policy on plagiarism and academic integrity:

Webster's Third New International Dictionary defines **plagiarism** as passing off the ideas or words of another person as one's own, and/or using a created production without crediting the source. Plagiarism is ethically and legally wrong, and it will not be tolerated in any form.

Be aware that you must cite your web sources just as you would sources from printed material. If you copy material verbatim *from any source*, including web sources, you must put quotation marks around the verbatim material and provide a citation to its source. Merely changing a word or two, so that the material is no longer verbatim, still is not enough to make those ideas your own. **YOU MUST ALWAYS CITE THE SOURCE.** The style manuals of both the American Psychological Association (APA) and the Modern Language Association (MLA) offer extensive guidelines on quotations and paraphrases.

When you paraphrase someone's work, you are not relieved of the responsibility to credit that person. But simply paraphrasing other people's work and ideas is not sufficient for a passing grade on your work. You typically will be building on existing ideas and showing your knowledge of existing literature. But you must go beyond mere description of what is already known to develop and present your own ideas. You must integrate, extend, and ultimately go beyond other people's ideas to your own.

**If you plagiarize any material on any assignment, you may receive a failing grade for the course.**

#### My application of the policy:

Assignments typically are individual. Although you may discuss your individual assignments with classmates, you must turn in work that is your own and attribute any ideas that are not your own. The distinction I make is similar to that made by traditional copyright law: **A copyright is the expression of an idea (like your solution to homework) in a fixed media susceptible to perception (like a file or hard-copy or computer screen). Copying of a physical (electronic) manifestation of a person's work is not permitted; sharing of ideas is.**

Remember:

- If it's not your idea, you **MUST** attribute the source.
- If they are not your words, you **MUST** quote ("") and attribute the source.
- If it is not your assignment/work, *fuhgetaboutit*.<sup>1</sup>

Still Confused?

- Check out <http://www.plagiarism.org/>

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<sup>1</sup> Italian-American slang for "You should drop the subject entirely before you end up at the bottom of the East River." <http://www.urbandictionary.com/define.php?term=Fuhgetaboutit>

UNO has an academic integrity policy and procedures available at <https://www.unomaha.edu/student-life/student-conduct-and-community-standards/policies/academic-integrity.php>

## **Late assignments**

I understand that many of you have outside jobs that may involve crises, stiff deadlines, or business trips that will take away from the time you choose to devote to course work and may interfere with the specific timetable laid out below. Consequently, you will be assessed a 2% assignment grade penalty for each day an assignment is late, up to a maximum of one week. This will reward students who do get their assignments in on time, but not penalize excessively those who due to work- or family- related circumstances are unable to meet the due date. No assignments more than a week late will be accepted, since I want to be able to return graded assignments in a timely manner.

## **ADA notice**

The Americans with Disabilities Act (ADA) requires universities to affirmatively notify students of their right to request accommodations. Reasonable accommodations are provided for students who are registered with Accessibility Services Center (ASC) and make their requests sufficiently in advance. For more information, contact ASC (Location: H&K 104, Phone: 402.554.2872, Email: [unoaccessibility@unomaha.edu](mailto:unoaccessibility@unomaha.edu))

## **Accreditation**

ISQA 4300 students: The Bachelor of Science Information Systems (BIS) and Bachelor of Science Computer Science (BCS) Programs are accredited by ABET, the Accreditation Board for Engineering and Technology. This organization requires that we keep samples of student work. Unless you specify otherwise, I may retain the original copy of your exams and assignments for accreditation purposes and return a copy to you.

## Safety Brief

Please make a note of the following safety-related information at UNO.

UNO Emergency Site: <http://emergency.unomaha.edu/>

Report on-campus emergencies: (402) 554-2911

Campus Security (non-emergency) (402) 554-2648

UNO Weather announcements (402) 554-2255

Anonymous tips Text to 79516 and begin message with “UNO911”

Sign up for SMS notification <https://www.e2campus.net/my/unomaha/>

From UNO Communications:

### Stay Informed

Sign up for [e2Campus](#) notifications via text and email alerts. If you are already signed up, **make sure your information is accurate and up to date.**

Make sure to follow UNO on [Facebook](#) and [Twitter](#) for important campus announcements.

Refer to the [UNO Emergency](#) website for details on plans and policies regarding threats to campus.

Questions about campus? Contact the UNO MavIGATION Station at 402.554.2800 or 1.877.884.6287 (MAVS).

### Stay Safe

Report any suspicious activity to UNO Public Safety at 402.554.2911 or anonymously using [U-Tip](#).

Make use of confidential counselors through [Counseling and Psychological Services](#).

Report any cases of discrimination or harassment to UNO's [Title IX Coordinator](#).

Make use of [UNO Health Services](#) for everything from examinations to vaccinations.

We are committed to your success as part of the Maverick family. Be sure to check out our [“Welcome Back”](#) page on the UNO website for additional tips, campus event information, and resources.

## Course Deliverables and Grading

The deliverables for the course will be a sequence of six assignments (5 for ISQA 4300 students). The final grade will be based on these assignments, plus the two exams, plus a component related to attendance and participation.

### Grading

Your grade will be computed as follows:

GRADE COMPONENT	POINTS POSSIBLE	
	<i>ISQA 4300</i>	<i>ISQA 8306</i>
Midterm	200	150
Final	200	150
Assignments	500	600
Weekly Activities	100	100
TOTAL	1000	1000

### Grade scale

Grading will be done on a curve, if necessary, but typically:

POINTS	LETTER GRADE
960-1000	A+
920-969	A
890-919	A-
860-889	B+
820-859	B
790-819	B-
760-789	C+
720-759	C
690-719	C-
660-689	D+
620-659	D
590-619	D-
<590	F

## Tentative Course Outline & Schedule

WEEK OF	TOPIC	READINGS	DELIVERABLES
August 26	Introduction		
September 2	System Architecture		
September 9	DBMS Architecture	[Watson] ch. 1-4	
September 16	Control Files Redo Log Files Data Dictionary		Assignment 1(a)
September 23	Managing Database Storage	[Watson] ch. 6-7	Assignment 1(b)
September 30	Table Management Index Management		Assignment 1(c)
October 7	Advanced Table Management		Assignment 2
October 14	Concurrency Control and Lock Management	[Watson] ch. 10	Assignment 1(d)
October 21	Concurrency Control and Lock Management (cont.)	[Watson] ch. 10	Assignment 3(a)
October 28	User Administration & Security	[Watson] ch. 8,11	Assignment 4(a), 3(b)
November 4	<b>Midterm Exam</b> Friday, November 8, 5:30pm -or- Saturday, November 9, 10:00am		
November 11	Managing Data Undo segments Oracle Net Services	[Watson] ch. 5,9	
November 18	Backup & Recovery	[Watson] ch. 18-19	Assignment 4(b)
November 25	Thanksgiving Holiday		
December 2	Performance Monitoring & Tuning	[Watson] ch. 12,13,14	Assignment 5
December 9	To be determined		Assignment 6
December 16	<b>Final Exam</b> Friday, December 13, 5:30pm -or- Monday, December 16, 5:30pm -or- Thursday, December 19, 5:30pm		