

Course Info

Winter 2019 • CRN 21069 • Tue/Thurs 6:00-8:15pm
30 sessions (Discussion/Lab mix) • **TTC Room 2350** (Comp. Lab)

Prerequisites: CIS 175 DataBase/SQL

Course Description: This hands-on course will advance students' knowledge and experiences with database queries, maintenance using SQL and Oracle. Emphasis will be on advanced database design, uses and architectures along with data security, DBMS installations, business intelligence, web technologies, and data mining.

Learning Objectives

- Design and Create advanced database table relationships and normalize to 4NF (Normal Form) using large scale table structures and data importing and transitioning from one data model to another.
- Maintain, Optimize Queries and complete Performance Tuning with advanced relationships using SQL and Oracle to include indexing, functions, stored procedures, sub queries
- Compare and contrast SQL and Oracle, Open Source DBMS and 3rd party management tools
- Complete Transaction Management and Concurrency Controls
- Fully understand security concerns
- Implement security procedures with queries and maintenance
- Perform installations of Oracle and SQL
- Perform database connectivity and web technologies
- Understand and create an awareness of database architectures and uses beyond relational, such as Distributed DBMS, Warehousing, Cube Technologies, including current trends in DBMS, along Business Intelligence concepts.

General Education Outcomes

- Effective written and oral communication
- Ability to think critically and to solve problems
- Information, numeric, and technology literacy
- A highly developed sense of ethics
- Strong personal management skills

Textbook: SQL, Database Design (one ... but all suggested)

- *Database Design for Mere Mortals* (John L. Viescas, Michael J. Hernandez)
- *SQL Queries for Mere Mortals* (Michael J. Hernandez)
- *Oracle SQL and PL/SQL* (Joel Murach)

Project 5 Reference Material (read all):

- Business Intelligence Concepts
 - Blue Granite Resources: <https://www.blue-granite.com/resources>
 - [5-reasons-to-get-excited-about-sql-server-2016-and-big-data](#)
 - [built-in-analytics-why-r-matters-to-a-sql-server-professional](#)
 - http://en.wikipedia.org/wiki/Business_intelligence
 - <http://mahedee.net/basic-concepts-of-business-intelligence-bi/>
- Data Mining
 - <http://msdn.microsoft.com/en-us/library/ms174949.aspx>
 - http://docs.oracle.com/cd/B28359_01/datamine.111/b28129/process.htm#DMCON002
 - http://en.wikipedia.org/wiki/Data_mining
- Alternate Database Systems - not only SQL, Warehousing, etc
 - <http://en.wikipedia.org/wiki/NoSQL>
 - <https://aws.amazon.com/nosql/>
 - 10-things/10-things-you-should-know-about-nosql-databases/

Instructor/KVCC Info

Office: 7338

Campus email: jburns@kvcc.edu – (best contact method)

Cell phone (will share if we find that necessary)

Campus phone: 269.488.4113

Voice mail: 269.488.4701 ...extension 6142

Office hours: T/R – 5:30-6:00ish classroom (if available) OR by appointment

KVCC Public Safety: 269.488.4575 --- located in room 5120 (TTC)

Class Policies

- Cheating/Plagiarism - *Student Handbook* ([KVCC PDF](#)) Page 17, Section II & III
- Graded Items
 - Must be turned-in, as scheduled.
 - Prior arrangements may be made - at the discretion of the instructor.
- Hand-in items due as defined in schedule, or via class session discussion
 - Occasionally, due dates “may be” modified due to snow day or other closures; however, in general – we are an electronic society – therefore hand-in via web/email is most likely alternate procedure

Grading

Attendance	30 sessions	
Project 1-5	50pts each	250pts - See "To Be Graded"
Quiz 1-10	10pts each	100pts - Class & Reading topics
Troubleshooting: 1-5	20pts each	100pts
Final Exam	100 pts	100pts - Comprehensive
Total Points	550	

	Grade	Points	△	%
Outstanding	4.0	495-550	55	90-100
Excellent	3.5	467-494	27	85-89
Good	3.0	440-466	26	80-84
	2.5	412-439	27	75-79
	2.0	385-411	26	70-74
	1.5	357-384	27	65-69
	1.0	330-356	26	60-64
	0.0	0-329	329	0-59

Definitions

4.0... = someone that understands a majority of the subject matter for the course and can apply that knowledge to create a variety of well-written programs. They understand where to go to find additional information and how to weave-in that new knowledge. To an employer, this student is a self-starter and requires little, to no handholding.

3.5... = better than a 3.0 and less than a 4.0

3.0... = someone that understands the subject matter at a level below the 4.0, can apply most of the knowledge to create programs similar to those used within the course, and knows where to find additional information, but struggles at how it fits into their current knowledge. To an employer, this student will require some handholding over the first few months to a year as the student gains additional experience.

2.5... = better than a 2.0 and less than 3.0

2.0... = someone who struggles with the subject matter, fails to apply this knowledge to new programs, yet can work through course example programs if given enough time. This student relies completely on the instructor and course book and has not learned how to use external knowledge sources, nor how to apply that knowledge. The student is one who has had outside influences affecting focus on coursework, procrastinated, or just did not try. To an employer, this student would not be valuable in the subject-matter arena.

0.0, 1.0, or 1.5 ... This student should repeat the course.

Note: If maintaining a higher GPA is important to you - and your ability to do well in the course has been compromised, I highly recommend that you withdraw from the course before the cut-off period. Take the course again, when you are able to focus.

Graded Hand-ins

Research Papers

The result of each project will be a research paper containing results of your learning work for each project. Details will be provided in separate project documents.

1. Install of database engine
2. Working Database
 - Install/Analysis of sample large database
3. 3rd Party Management Tools
4. Alternate Database, Business Intelligence, Data Mining
 - Review links noted in Textbook section of this document.
5. TBD – based on current events in database world

Each of above should include technically informative detail. You may find having a few screen captures help to not only guide your detail and enable you to discuss specifics.

Troubleshooting Projects

There will be 5 troubleshooting projects. Each will be done inside one of the database management tools (e.g. SSMS, SQL Developer). The project issue and goal will be defined. There is a time-allowance for these projects – defined as one lab-period. (assumption will be that 3.5-4.0 student would complete in ½ lab-period)

Examples:

- Sample database to be provided
- SQL statement is incomplete – to be fixed
- Create a fully-defined stored procedure, view, or function
- Table or column missing – correct, such that SQL statement works

Note: while these troubleshooting projects are meant to simulate a work environment, they are not group projects (e.g. do your own work). Course material & Internet are available.

Troubleshooting Grading Guidelines

This graded item is like a quiz – in that you have one chance to do the work and turn it in. No makeups.

Research Paper Guidelines

For CIS275, the concept of a research paper is defined as:

- They are Not Step-by-Step guides
 - Help me know the work you completed
 - Do not include every screen you encounter
 - Ok to include “cropped” screen capture(s) which enable you to better explain the topic for any given paragraph/page
- Think: formal summaries of your work as you step through the assigned projects
- Consider your audience to be a co-worker with knowledge/skills similar to your own
- Likely never a single page; to properly inform the reader, each paper would likely be many pages. The goal is not about “filling out” ‘x’ number of pages – it is about providing good information, such that your reader will understand what you did, gain knowledge of issue points, and as a result - be efficient and productive.
- Should use common college paper formatting
 - 1” margins
 - Use common font-family: Arial, Calibri, Helvetica (or similar)
 - Font-size no larger than 12pt, smaller sizes are acceptable for “less important” text (example: captions of an image)
 - Title page: Project name/number, purpose, author, date
 - Headers/Footers optional – but should be appropriately applied (e.g. not on title page), and should provide value to the space taken on the page
- Content that relates to software versions – should have the version noted
- While not an English/Grammar course – you should be using a modern word processing program which performs basic checking (e.g. spelling/grammar)
- Hand-In: Electronic (Word/PDF) & paper. Pages stapled together (upper-left); they do not need binding/binders/fancy folders.
- While I encourage you to discuss the concepts with your classmates, the resulting papers are not group projects – Do Not Share Your Work
 - Any papers which come across as duplicates – will be zeroes for each
 - If you’ve worked with a classmate and that work is going to result in a specific paragraph being fairly similar – then treat it like the content came from elsewhere (see following)
- Content not your own (picked from the Internet/books) cannot be more than 10-15% of your paper. This content – if used, must have a reason for existing in your paper and therefore it should enhance your own content.
 - Identified using a note e.g. bibliography/footnote section
 - If your paper comes across to me as essentially a “copy/paste” with some words tossed about – it will be returned ungraded. Note: you will have a maximum of one week to correct it.
- In general, if the paper needs work – no grade will be assigned. It will be returned. You will have a maximum of one week to correct it.
- For papers duplicated between students – see KVCC Student Handbook

External References

Database Guidelines (representation of “sides”)

- SO: SQL Naming Guidelines: <http://stackoverflow.com/questions/7662/database-table-and-column-naming-conventions>
- Code Project: <http://www.codeproject.com/Articles/22947/A-Naming-Scheme-for-Database-Tables-and-Fields>
- Blog: <http://blog.sqlauthority.com/2007/06/04/sql-server-database-coding-standards-and-guidelines-part-1/>
- Any number of others – search term: *database naming guidelines*

Programming/Development Guidelines

- Microsoft "Naming Guidelines": [http://msdn.microsoft.com/en-us/library/xzf533w0\(v=VS.71\).aspx](http://msdn.microsoft.com/en-us/library/xzf533w0(v=VS.71).aspx)
- Microsoft “Guidelines for Names”: <http://msdn.microsoft.com/en-us/library/ms229002.aspx>
- Microsoft "Working with Base Types": [http://msdn.microsoft.com/en-us/library/7wchwf6k\(v=VS.71\).aspx](http://msdn.microsoft.com/en-us/library/7wchwf6k(v=VS.71).aspx)
- Microsoft Search (UX guidelines): <https://social.msdn.microsoft.com/Search/en-US?query=windows%20ux%20guidelines&ac=5>
- Pete Brown: <http://10rem.net/articles/net-naming-conventions-and-programming-standards---best-practices>
- StackOverflow: <http://stackoverflow.com/questions/181597/what-are-the-naming-guidelines-for-asp-net-controls>
- Joel Spolsky: <http://www.joelonsoftware.com/articles/Wrong.html>

See references folder (e.g. Course folder tree), for more

Highly Recommended

- **Code Complete** - [author's site](#), Amazon: [Author's books](#)
- **Don't Make Me Think** - [author's site](#), Amazon: [Author's books](#)
- **Use the Index, Luke** [author's site](#), Amazon: [Author's books](#)

Class Schedule (subject to change)

January

Date	DOW	To Do	Details/Reference
8	T	Intros, Learning Community SQL Server Express Install/Setup (P1)	VM Drives
10	R	SQL Server Express Install/Setup continued	
15	T	SQL Review/Work Session	Quiz #1
17	R	SQL Review/Work Session	TBL#1
22	T	SQL Review/Work Session	Quiz #2 Paper #1 Due
24	R	Working Database (P2) Install AdventureWorks / Analysis	
29	T	SQL Review/Work Session	Quiz #3
31	R	SQL Review/Work Session	TBL#2

February

5	T	3 rd Party Management Tools (P3)	Quiz #4 Paper #2 Due
7	R	Stored Procedures, Transactions	
12	T	SQL Review/Work Session	
14	R	SQL Review/Work Session	Quiz #5
19	T	Application DB Connections (MS SQL)	Paper #3 Due
21	R	SQL Review/Work Session	
26	T	SQL Review/Work Session	Quiz #6
28	R	SQL Review/Work Session	TBL#3

March

Date	DOW	To Do	Details/Reference
5-7		Spring Break - no class	
12	T	Oracle Database Express/SQL Developer	
14	R	Oracle Review/Work Session	Quiz #7
19	T	Oracle Review/Work Session	TBL#4
21	R	Oracle Review/Work Session	
26	T	Oracle Review/Work Session	Quiz #8
28	R	Functions/Work Session	Paper #4 Due

April

2	T	Functions continued/Work Session	
4	R	Functions continued/Work Session	Quiz #9
9	T	TBD/Work Session	Discuss P5 Items
11	R	TBD/Work Session	
16	T	TBD/Work Session	Quiz #10
18	R	TBD/Work Session	TBL#5
23	T	Work Session College IDEA Survey	Paper #5 Due
25	R	Final Exam	Comprehensive

Semester officially ends on Monday April 29th

Community Time

- College Computer Club – Friday evenings Fall & Winter
- Other conferences - Dev Days/Nights, SQL Saturdays

Ethics

Electronic Class Attendance Report (E-CARs) occurs the 3rd week of class. I report participation in class based on active attendance and real effort. Do not ask me to help you commit fraud.

Attendance

I monitor attendance for the college. I do not award points for your attendance. Enhancing your learning... that is the reason you should attend class.

Can you learn without attending class? Some students can; however, your lack of attendance places a high burden on you to learn on-your-own. I have found through personal experience and also proven by students that less learning takes place, when students do not attend class. The amount of knowledge transferred in-class through discussion, demonstrations, and over-the-shoulder guidance is significant.

I do not teach this class via email and the short videos (if available) are not a replacement for your attendance and participation.

Make the decision to attend and participate in class!

Grading Plan

My goal in this course is that you learn the material.

Research Papers have defined due dates. You must turn in each paper by the due date, or take a zero for that project. After my review, if I believe the project is incomplete, I will give you another week to advance the project (except for #5 – as the semester will be nearly over).

It doesn't make sense for you to continue to the next objective when you are struggling with a prior objective. However, the college semesters offer us a defined time period to complete the content; therefore, if you have not finished sections of work early in the semester, it does not make sense for you to take the final exam or complete the final project - without the knowledge to do so.

Troubleshooting projects, like quizzes (and the final exam) have a defined period to complete them. Usually a portion to all of a class/lab period. No makeups allowed; however, prior scheduling to perform work in Testing Center can be arranged.

Course Book

See Textbooks & Readings

Commitment to Learning Community

I enjoy learning. I enjoy the entire atmosphere of learning. The new knowledge, the interactions, and the shared ideas. My goal is to foster a learning community.

You can learn by reading a book and then trial-error your way to a solution. Over time you will likely "get it". However, you will find that when you participate in a learning community... the time to "get it", is significantly less.

A quality work environment is a learning community. Sharing amongst peers can help you reach goals, seek new ideas, or spur new learning & work opportunities.

Each student should seek out learning communities - one which each participant can and will interact with others in the community. It is these interactions and sharing of ideas which will enable the greatest amount of learning to occur.

Support

Many of us may not have learned... *how to learn*. Sometimes the course material really stumps us. What is a struggling student to do? The college offers many resources to help struggling students. Our goal is that you succeed. However, it really is up to the student to seek out assistance.

Be Realistic

1. The sooner the better - most learning is cumulative - you need to know first parts, to continue to later parts
2. Missing (or skipping) classes and then trying to catch up is very frustrating, as you realize how difficult it is to recover lost time

Instructor

Speak with your instructor. Really! I would be glad to help you find what it takes to turn the light bulb on as you learn the course material. If you're not "getting it" in class, then let's arrange a time outside of class, so we can figure it out.

Class Network

Network with your classmates. Successful students work together to learn. Work this network!

Student Success Center

A great place to become familiar with, before you need help. The place to go if you need extensive help. Arrange *one-on-one* tutoring, information about "how-to-study", reading assistance, etc.