

COP 4703 Advanced Database Systems for IT

Credit Hours: 3 Prerequisites: none Corequisites: COP 4538 (Data Structures and Algorithms for IT) CRN: 87147 Section: 701 College of Engineering Computer Science & Engineering

COURSE SYLLABUS

Instructor Name:	Dr. Sueychyun Fang	Semester/Term & Year:	Fall 2017 (Aug 21 ~ Dec 07)
Office Number:	ENB 301A	Primary Instructional Mode:	100 % Online
Phone Number:	(813) 974-2398	Delivery Method:	Canvas
E-mail:	fang1@usf.edu	Teaching Assistant (TA):	Jean Baptiste Subils
Website:	TBD	TA E-mail:	subils@mail.usf.edu
Office Hours:	2:00 ~ 6:00pm Wednesday	TA Office Number:	ENB 325
		TA Office Hours:	3:00 ~ 5:00pm Thursday

I. University Course Description (2017-2018 catalog)

Database management systems are presented, covering relational, CODASYL, network, hierarchical, and object-oriented models. Backups and database server admin are covered. Best practices for information management are covered.

II. Course Overview

The goal of this course is to make students knowledgeable of database management systems and their tools. It teaches students how to create databases and their stored objects as well as how to use and manage database systems productively. Because this course is designed to be a learn-by-doing kind of class, major effort will be devoted to hands-on work with sample databases using Microsoft SQL Server.

III. Course Objectives

Upon successful completion of the course, students should be able to

- 1) Install and configure a database management system such as SQL Server or MySQL.
- 2) Work with tools provided by a database management system.
- 3) Write DDL and DML SQL commands to design, implement, and access databases.
- 4) Develop database objects like views, stored procedures, functions, triggers, etc.
- 5) Secure a DBMS and its databases by managing authentication and authorization.

IV. Required Texts and Software

 Murach's SQL Server 2012 for Developer, Bryan Syverson and Joel Murach, 2012 ed, ISBN: 978-1-890774-69-1

- Books Online for SQL Server 2012 https://msdn.microsoft.com/en-us/library/ms130214(v=sql.110).aspx
- Microsoft[®] SQL Server[®] 2012 Express (for Windows 7 only) <u>https://www.microsoft.com/en-us/download/details.aspx?id=29062</u> *select SQLEXPRWT_x64_ENU.exe (if your Windows is 64-bit) or SQLEXPRWT_x86_ENU.exe (if your Windows is 32-bit)
- Microsoft[®] SQL Server[®] 2012 Service Pack 3 (SP3) Express (for Windows 7 or newer) <u>https://www.microsoft.com/en-us/download/details.aspx?id=50003</u> *select SQLEXPRWT_x64_ENU.exe (if your Windows is 64-bit) or SQLEXPRWT_x86_ENU.exe (if your Windows is 32-bit)

V. Methods of Instruction

Textbook study, hands-on exercises, online discussions with the instructor, voice over PowerPoint slide lectures, and web research. This instructional approach requires the student to take a self-motivated and active approach to learning. In order to be successful, the student must develop study habits vital to learning in a mixed technology environment, including:

- Organization skills
- Autonomous learning
- Complete tasks ahead of time
- Understand, follow, and apply written instructions
- Written Communication skills
- Commitment to necessary study time
- Learn novel techniques and technologies
- Reading skills

VI. Assessment of Student Learning Outcomes

Assessment	Percent of Final Grade
Discussion & Posts	10%
Quizzes	10%
Assignments & Projects	20%
Exams (20% x 3)	60%
	100%

Grade	Point Value	Score	Grade	Point Value	Score	Grade	Point Value	Score
A+	4.00	100+ -97	Α	4.00	96.99-93	A-	3.67	92.99-90
B+	3.33	89.99-87	В	3.00	86.99-83	B-	2.67	82.99-80
C+	2.33	79.99-77	С	2.00	76.99-73	C-	1.67	72.99-70
D+	1.33	69.99-67	D	1.00	66.99-63	D-	.67	62.99-60
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VII. Grade Dissemination

Graded tests and materials in this course will be returned individually via Canvas. You can access your scores at any time using "Grades" in Canvas.

VIII. Course Policies: Grades

COP-4703 Database Systems for IT Late Work Policy:

All posted work for grades, including chapter reading, quiz, and homework assignment are <u>due in one</u> week on the following Sunday at 11:59pm of the assigned week unless otherwise posted on Canvas. For example, if reading and quiz of Chapter 1 and homework assignment of week 1 are posted on Monday, Aug 21st, they are due in one week at 11:59pm, Sunday, Aug 27th.

Assignments received after the due date will be penalized at the rate of 10% for each day or portion of a day that they are late.

Make-up/Missed Work Policy:

The instructor will accommodate students who have to miss assignments or exams due to medical emergencies in the immediate family or job-related situations. These are the only conditions under which accommodation will be considered during the semester. Should such a situation arise, the student should notify the instructor and provide necessary documentation before the missed assignment or test can be rescheduled.

Grades of "Incomplete":

The current university policy concerning incomplete grades will be followed in this course. For USF Tampa undergraduate courses, an "I" grade may be awarded to a student only when a small portion of the student's work is incomplete and only when the student is otherwise earning a passing grade. The time limit for removing the "I" is to be set by the instructor of the course. For undergraduate students, this time limit may not exceed two academic semesters, whether or not the student is in residence, and/or graduation, whichever comes first. For graduate students, this time limit may not exceed one academic semester. "I" grades not removed by the end of the time limit will be changed to "IF" or "IU," whichever is appropriate.

Final Examinations General Policy:

http://regulationspolicies.usf.edu/policies-and-procedures/pdfs/policy-10-005.pdf

Online courses have the final exam scheduled on Sunday December 03, 2017 per USF Final Exam Schedules http://www.usf.edu/space/documents/final-exam-matrix.pdf. Considering some people need to work on Sunday, this course's final exam will be two full day accessible with two-hour limit on the above date plus Monday December 04, 2017.

IX. Course Policies: Technology and Media

Email:

Every enrolled USF student receives an official USF e-mail account that ends with "mail.usf.edu." Every official USF correspondence to students is sent to that account.

Canvas:

This course will be offered via USF's learning management system (LMS), Canvas. If you need help learning how to perform various tasks related to this course or other courses being offered in Canvas, please consult the Canvas Student Guide <u>https://guides.instructure.com/m/4212</u>. You may also contact USF's IT department for help at (813) 974-1222 or <u>help@usf.edu</u>.

Proctored Examinations:

All examination will be proctored using the university online proctoring tool **Proctorio**. All students must review the syllabus and the requirements including the online terms and video testing requirements to determine if they wish to remain in the course. Enrollment in the course is an agreement to abide by and accept all terms. Any student may elect to drop or withdraw from this course before the end of the drop/add period.

Online exams within this course require online proctoring. Therefore, students will be required to have a webcam (USB or internal) with a microphone when taking an exam or quiz. Students understand that this remote recording device is purchased and controlled by the student and that recordings from any private residence must be done with the permission of any person residing in the residence. To avoid any concerns in this regard, students should select private spaces for the testing. The University library and other academic sites at the University offer secure private settings for recordings and students with concerns may discuss location of an appropriate space for the recordings with their instructor or advisor. Students must ensure that any recordings do not invade any third party privacy rights and accept all responsibility and liability for violations of any third party privacy concerns. Setup information will be provided prior to taking the proctored exam. For additional information about online proctoring you can visit the online proctoring student FAQ at

http://www.usf.edu/innovative-education/resources/student-services/online-proctoring.aspx.

All three exams, including the final exam in this course will be online proctored, time-limited exams. Each will be accessible for 48 hours on the two exam days and each will be 2 hours long. You will be required to take these exams using Canvas with **Proctorio** and other software required by the syllabus.

The following will result in receiving zero points to any of these exams and thus potentially fail the course.

Inability to take the exam due to lack of proper equipment; e.g. it is your responsibility to ensure that you own a PC with required tools and software allowing you to perform all required exams tasks.
 Communicating in any way during the exam with anyone besides the proctor.

The instructor reserves the right to update the process outline above to reflect changes required to meet the specific needs of the course, department and university policy and procedures as required.

X. Course Policies: Student Expectations

Course Attendance at First Class Meeting:

Students are required to attend the first class meeting of courses for which they registered prior to the first day of the term. Names of students who register prior to the first day of the term are printed on the first class roll for each course section. The first class roll is used by professors to drop students who do not attend the first day of class. For this online class, you are required to complete the first discussion post on Canvas by end of Friday, 11:59pm on Aug 25th 2017 to meet this requirement and therefore avoid to be dropped from the class.

Students having extenuating circumstances beyond their control and who are unable to attend the first class meeting must notify the instructor or the department prior to the first class meeting to request waiver of the first class attendance requirement.

Students who add courses or late-register during the first week of classes will not be on the first class roll and, therefore, will not be dropped for non-attendance by the instructor. Students are responsible for

dropping undesired courses in these categories by the 5th day of classes to avoid fee liability and academic penalty.

General Attendance/Participation Policy:

This course is not self-paced and is taught entirely online module by module. <u>A new module of course</u> <u>content will be published in Canvas every Monday during the semester</u>. Regular logins and participation in class work are mandatory and tracked by Canvas. Material not covered in the textbook could also be discussed in the lecture slides or posted notes. Students should plan on logging in regularly throughout the week to review and respond to course materials, readings, discussion posts, and announcements. Infrequent logins or failure to participate in required activities are treated as absence. It will adversely affect the course grade and may result in the student being administratively dropped from the course.

Submission Guidelines:

The following are general points to be observed in all deliverables:

- Submission of files must be typed (or word-processed).
- Student name, course number, and deliverable identification or title (e.g., assignment number, etc.) must be clearly stated in all submissions and any email correspondence.
- If it is a SQL script text file, the file name extension must be .sql and SQL coding guidelines (see Chapter 1) should be applied to the script writing.
- Please retain all deliverables until you verify that scores have been correctly posted in Canvas.
- All deliverables, unless otherwise noted, must be submitted through the designated links in Canvas.
- Citation for references of all external sources, regardless of the format, regardless of the location, must be properly denoted to give credit to the originator.
- All submissions must be original work of the student. Cheating will result in up to an "FF" grade for the course.
- The instructor may post a question or query or concept in Canvas, and you are to expand and research the topic further. You may also be required to post, answer, or comment on one or more classmates for each topic.
- All posts and discussions must be held in a professional manner, no foul or unprofessional language, no threats, or other intimidating comments will be allowed.

Academic Integrity of Students:

http://regulationspolicies.usf.edu/regulations/pdfs/regulation-usf3.027.pdf

Disruption to Academic Process:

http://regulationspolicies.usf.edu/regulations/pdfs/regulation-usf3.025.pdf

Student Academic Grievance Procedures:

http://regulationspolicies.usf.edu/policies-and-procedures/pdfs/policy-10-002.pdf

Disability Access:

http://regulationspolicies.usf.edu/policies-and-procedures/pdfs/policy-0-108.pdf

Sexual Misconduct/Sexual Harassment Reporting: <u>http://regulationspolicies.usf.edu/policies-and-procedures/pdfs/policy-0-004.pdf</u>

Religious Observances:

Students who anticipate the necessity of being absent from class due to the observation of a major religious observance must provide notice of the date(s) to the instructor, in writing, by end of the first week of class.

End of Semester Student Evaluations:

All classes at USF make use of an online system for students to provide feedback to the University regarding the course. These surveys will be made available at the end of the semester, and the University will notify you by email when the response window opens. Your participation is highly encouraged and valued.

Campus Emergencies:

In the event of an emergency, it may be necessary for USF to suspend normal operations. During this time, USF may opt to continue delivery of instruction through methods that include but are not limited to: Canvas, Elluminate, Skype, and email messaging and/or an alternate schedule. It's the responsibility of the student to monitor the Canvas site for course specific communication, and the main USF, college, and department websites, emails, and MoBull messages for important general information.

XI. Instructor-Specific Course Policies

Instructor's Right to Modify the Course Syllabus:

As the instructor of this course, I reserve the right to modify the course syllabus at any time during the course to address changes needed in content, course resources, assignments, exams, etc. Changes will be made so as not to impact negatively students' grades.

Miscellaneous:

- 1. The main mode of communication between the instructor and students during off-class hours will be the Canvas Announcement portal. You are responsible to regularly check email directed to your official USF email addresses for any announcements.
- 2. Students do not have permission to sell lectures notes or provide the assignments and tests to others.

XII. Important Date/Time about This Course to Remember

First week class attendance:Drop/Add Deadline:	Fri, Aug 25 2017 (Completing a post in Canvas by midnight) Fri, Aug 25 2017
• Exam #1:	Wed~Thr, Oct 04~05 2017
• Exam #2:	Wed~Thr, Nov 01~02 2017
 Last day to drop with "W": 	Sat, Oct 28 2017
 Reading days: 	Tue~Wed, Nov 21~22 2017
Thanksgiving Holiday:	Thr~Fri, Nov 23~24 2017
 Last class day: 	Fri, Dec 01 2017
• Exam #3:	Sun, Dec 03 2017 ~ Mon, Dec 04 2017 (with 2-hour time limit)

XIII. Course Outline/Schedule

COP-4703 Database Systems for IT

* Introduction to the course * Reading and quiz: Chapter 1 (1) • Database System Overview • Download and install Microsoft SQL Server 2012 Express (See Appendix A) (2) • DBMS Tools • Reading and quiz: Chapter 2 (2) • SQL Server Management Studio (SSMS) • Reading and quiz: Chapter 2 (3) • Retrieve single table data • Download and install textbook databases (See Appendix B) (4) • Retrieve single table data • Reading and quiz: Chapter 3 (5) • Ostabase queries • Reading and quiz: Chapter 4 (9)/14 - Set operators • Reading and quiz: Chapter 5 (7) • Subagregation & grouping • Reading and quiz: Chapter 5 (9/25) • Summary Queries • Reading and quiz: Chapter 6 (7) • Complex database queries • Reading and quiz: Chapter 7 (8) • SQL data types & data conversion • Reading and quiz: Chapter 7 (7) • Database design & normalization • Reading and quiz: Chapter 8, 9 (10/20) • Database design & normalization • Reading and quiz: Chapter 10 (10) • Database implementation • Reading and quiz: Chapter 11 (10/21) • SQL data types & data conversion •	Week	Topics	Assignments
(1)Database System Overview (8/21)Download and install Microsoft SQL Server 2012 Express (See Appendix A)08/21Relational Data Models & RDBMS • SQL* Demostry SQL Server • DBMS Tools • SQL Server Management Studio (SSMS) • Online help & references: Books Online • Retrieve single table data • SQL/DML • Column and row selection • Sorting* Reading and quiz: Chapter 2 • Download and install textbook databases (See Appendix B)(3) 09/04 • Column and row selection • Sorting* Reading and quiz: Chapter 3(4) 09/14 • Retrieve multi-table data • Set operators* Reading and quiz: Chapter 4(5) 09/18 • Data aggregation & grouping • Data aggregation & grouping • Data modification • Action Queries • SQL data types & data conversion (CT)* Reading and quiz: Chapter 7 • Reading and quiz: Chapter 7 • Reading and quiz: Chapter 7 • Reading and quiz: Chapter 8, 9(7) 10/02 • Database design & normalization • Database design & normalization • Database scripting• Reading and quiz: Chapter 10(10) • Database implementation • Database scripting • Database scripting• Reading and quiz: Chapter 11 • Two hours online proctored on 10/04~02 (W~R) • Reading and quiz: Chapter 13 • Reading and quiz: Chapter 13 • Reading and quiz: Chapter 14(11) • Views • Database scripting • Views • Database scripting • Database scripting • Database scripting • Reading and quiz: Chapter 14 • Reading and quiz: Chapter 14 • Reading and quiz: Chapter 14 • Reading and quiz: Chapter 15 • Composition • Reading and quiz: Chapter 16 • Composition • Reading and quiz: Chapter 16 • Composition • Reading and quiz: Chapter 16 • Compos		 Introduction to the course 	 Reading and quiz: Chapter 1
08/21 • Relational Data Models & RDBMS 2012 Express (See Appendix A) • SQL • DBMS Tools • Reading and quiz: Chapter 2 (2) • SQL server Management Studio (SSMS) • Download and install textbook databases (See Appendix B) 08/28 • Managing a database and its files • Download and install textbook databases (See Appendix B) 08/28 • Managing a database and its files • Download and install textbook databases (See Appendix B) 09/204 - SQL/DML • Column and row selection • Reading and quiz: Chapter 3 09/14 - Column and row selection • Reading and quiz: Chapter 4 09/14 - Inner & outer joins • Reading and quiz: Chapter 4 09/14 - Set operators • Reading and quiz: Chapter 5 09/20 • Summary Queries • Reading and quiz: Chapter 5 09/21 • Subqueries • Reading and quiz: Chapter 6 09/22 • Complex database queries • Subqueries 09/25 • SQL datatpses 1^ ~ 6) • Two hours online proctored on 10/04~05 (W~R) 10/02 • Data modification • Reading and quiz: Chapter 7 (8) • SQL data types & data conversion • Reading and quiz: Chapter 10 (10)	(1)	 Database System Overview 	 Download and install Microsoft SQL Server
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09/11 - Inner & outer joins • Reading and quiz: Chapter 4 09/14 - Set operators • Reading and quiz: Chapter 4 09/14 - Set operators • Reading and quiz: Chapter 4 09/18 • Summary Queries • Reading and quiz: Chapter 5 09/20 • Complex database queries • Reading and quiz: Chapter 6 09/25 • Complex database queries • Reading and quiz: Chapter 6 09/25 • Common table expression (CTE) • Two hours online proctored on 10/04~05 (W~R) (7) • Data modification • Reading and quiz: Chapter 7 (8) • SQL data types & data conversion • Reading and quiz: Chapter 7, (8) • SQL data types & data conversion • Reading and quiz: Chapter 7, (9) • Database design & normalization • Reading and quiz: Chapter 10, (10) • Database implementation • Reading and quiz: Chapter 11, (11) • EXAM 2 (Chapters 7 ~ 11) • Two hours online proctored on 11/01~02 (W~R) (11) • Views • Reading and quiz: Chapter 13, (12) • Stored procedures • Reading and quiz: Chapter 15 (p.448-473), (13) • User-defined functions • Reading and quiz: Chapter 15 (p.448-473),	(4)	Retrieve multi-table data	
09/14- Set operators(5)99/18• Summary Queries• Data aggregation & grouping• Complex database queries- Subqueries- Subqueries- Common table expression (CTE)• EXAM 1 (Chapters 1 ~ 6)• Data modification• Data modification• Action Queries• SQL data types & data conversion(8)• SQL data types & data conversion(9)• Database design & normalization• Reading and quiz: Chapter 7(8)• SQL data types & data conversion(10)• Database design & normalization• Reading and quiz: Chapter 10(11)• EXAM 2 (Chapters 7 ~ 11)• Views• Database scripting• Stored procedures• Reading and quiz: Chapter 13• News• Database scripting• Stored procedures• Reading and quiz: Chapter 15 (p.448-473)• Triggers(13)• Triggers	09/11	– Inner & outer joins	 Reading and guiz: Chapter 4
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 (12) • Stored procedures 11/06 • User-defined functions (13) • Triggers • Reading and quiz: Chapter 15 (p.448-473) • Reading and quiz: Chapter 15 (p.474-483) 	10/30	 Database scripting 	 Reading and quiz: Chapter 14
11/06• User-defined functions• Reading and quiz: Chapter 15 (p.474-483)(13)• Triggers• Reading and quiz: Chapter 15 (p.474-483)	(12)	Stored procedures	 Reading and quiz: Chapter 15 (p.448-473)
(13) Triggers A Pooding and quize Chapter 15 (p. 494, 405)	11/06	 User-defined functions 	 Reading and quiz: Chapter 15 (p.474-483)
	(13)	1 Triggers	A Deading and guize Chapter 15 (p. 494, 405)
11/13 * Thegers * Reading and quiz. Chapter 15 (p.464-495)	11/13	• Triggers	• Reading and quiz: Chapter 15 (p.484-495)
(14) • USF Reading Days: 21 st & 22 nd	(14)	• USF Reading Days: 21 st & 22 nd	
11/20 • Thanksgiving Holiday: 23 rd & 24 th	11/20	 Thanksgiving Holiday: 23rd & 24th 	NO Classes
Database security— authentication &		Database security— authentication &	
authorization		authorization	
(15) – Logins + Reading and quiz: Chapter 18	(15)	– Logins	 Reading and quiz: Chapter 18
11/27 – SQL/DCL	11/27	– SQL/DCL	
– Permissions		– Permissions	
– Roles		– Roles	
12/03 • Two hours online proctored on 12/03~04	12/03		 Two hours online proctored on 12/03~04
• EXAM 3 (Chapters 13, 14, 15, 18) (Sun~Mon)	, -	 EXAM 3 (Chapters 13, 14, 15, 18) 	(Sun~Mon)
12/04	12/04		

USF Computer Science and Engineering Department

Revisions

8-28-2017	1. USF Reading days are changed from Nov 29-30 to Nov 21-22.
	2. Week 14 has no classes.
	3. Content of Week 14 is moved to and merged into Week 15.
	4. Exam 3 covers Chapter 9 ~ 12.
	5. TA office number and hours are added.
9-22-2017	1. 'Proctored Examinations' inserted into IX. Course Policies: Technology and Media

2. Table of XIII. Course Outline is modified to reflect schedule adjustment due to hurricane Irma from Sep 07~13. The changes include date of EXAM 1 and 2, and weekly content from week #3.