

Database Programming

Summer II 2020

Catalog Description

Programming in a large-scale relational database environment using procedural languages. Topics covered in the course include procedural extension of query languages, runtime error handling, subprograms (procedures and functions), packages, database triggers, dynamic query language. Optional topics include transaction management, reliability, and security.

Logistics

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|--------------------------|---|
| Day and Time: | This is an online class. Attendance will not be required. Regular Zoom sessions will be provided as needed to go over your questions and concerns. |
| Location: | ONLINE |
| Course Website: | Desire2Learn https://d2l.depaul.edu |
| Drop dates: | 07.24.2020 without financial penalty 08.11.2020 with financial penalty |
| Pass/fail option: | 08.31.2020 Last day to select pass/fail option |

See Academic Calendar: <https://academics.depaul.edu/calendar/Pages/default.aspx>

Instructor

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| Name: | Hani AbuSalem, Ph.D. |
| Office Hours: | Tue 4:00pm – 5:30pm on Zoom by Appointment only |
| | I am available during office hours on ZOOM, by phone, e-mail. It is possible that there will be some delay before I respond to e-mail, phone calls or through Zoom. When you call, please leave a message that indicates the number you can be reached at and gives the best time to return your call. |
| Email: | habusale@depaul.edu |
| Phone: | 803-380-3424 |

Learning Outcomes

This course focuses on programming in relational database environment using Oracle PL/SQL. This is a programming-oriented course and all assignments will incorporate Oracle SQL and PL/SQL.

Students will be able to:

- Master the SQL statements
- Design Databases like a DBA
- Understand how to process PL/SQL programs in SQL Developer
- Analyze and design strategies for a variety of practical problems in business
- Display proficiency in coding PL/SQL programs
- Develop efficient PL/SQL programs to identify and handle exceptions
- Enhance performance using collection datatypes and bulk operations
- Create procedures, functions, packages, and triggers to solve business challenges and enforce business rules
- Invoke dynamic SQL to build run-time SQL statements
- Get going with 12c features

Tentative Schedule

| Date | Topic | Required Reading | Assignment |
|----------------------------------|---|-------------------------------------|--|
| Week1 7/20 Session1 | An introduction to relational databases and SQL. How to use Oracle SQL Developer and other tools. Introduction to PL/SQL. | Ch1, Ch2 in Textbook & Lecture1 PPT | Set up your programming environment, log into your Oracle account, and practice. |
| Session2 | Master the SQL statements, how to retrieve data from a single table, how to retrieve data from two or more tables, & how-to code summary queries | Lecture2 PPT | HW#1 Due Date 7/26 11:59pm |
| Week2 7/27 Session1 | PL/SQL Language Fundamentals | Ch3 in Textbook & Lecture3 PPT | |
| Session2 | Exception Handling, Subprograms (Procedures and Functions), and PL/SQL Programming debugging Techniques. | Ch3 in Textbook & Lecture4 PPT | HW#2 Due Date 8/2 11:59pm |
| Week3 8/3 Session1 | Midterm Exam (online on D2L). | | Date: 08/03/2020 Time: 6:00-9:00pm |
| Session2 | PL/SQL Database Interactions and Cursors | Ch3 in Textbook & Lecture6 PPT | HW#3 Due Date 8/9 11:59pm |
| Week4 8/10 Session1 | PLSQL Packages & Triggers | Ch3 in Textbook & Lecture7 PPT | |
| Session2 | PL/SQL Collections, PL/SQL Tables, PL/SQL Nested Tables, PL/SQL Varrays. | Lecture8 PPT | HW#4 Due Date 8/16 11:59pm |
| Week5 8/17 Session1 | How to use SQL from an application program, JDBC, SQLJ. Optional-Advanced Topics in Database Programming (SQL Injection, Database Security and Privacy), and Course Review. | Ch5 in Textbook & Lecture9 PPT | |
| Session2 | Final Exam (online on D2L). | | Date: 08/20/2020 Time: 6:00-9:00pm |

Text

Required text: "**ORACLE10g™ Programming: A Primer**", Raj Sunderraman, 2007, Addison-Wesley.

Recommended texts:

- *Oracle Database PL/SQL Language Reference. 12c Release 2 (12.2)*. January 2019. It is available online for free download. <https://docs.oracle.com/en/database/oracle/oracle-database/12.2/lnpls/database-pl-sql-language-reference.pdf>
- *Oracle Database 12c SQL*. Jason Price, McGraw-Hill Education, 2014. ISBN: 978-0-07-179936-2. Text is available at DePaul Library 24 X 7 books
- *Practical Guide to Using SQL in Oracle*, 2nd edition, Richard Walsh Earp and Sikha Bagui, ISBN: 978-1-5982-2063-6.
- *Oracle SQL and PL/SQL for developers*, Joel Murach's, Mike Murach & Associates, Inc, 2014. ISBN:978-1-890774-80-6
- **Oracle® 11g: PL/SQL Programming**, 2nd Edition, Joan Casteel, ISBN-13: 9781133947363 © 2013

Prerequisites for CSC 452 students

One of: CSC453-Database Technologies, CSC451-Database Design, or CSC455-Databases for Large Scale Processing and one of: CSC401-Introduction to Programming or IT411-Scripting for Interactive Systems

Prerequisites for CSC 352 students

(IT 240 or CSC 355) and (CSC 212 or CSC 242 or CSC 243 or CSC 300 or CSC 309).

Assignments and Grading

1. 40% - Homework Assignments.

- There will be homework assignments given most weeks; assignments will be posted on the course web site. It is your responsibility to verify that your submitted files are readable, submitted on time, and in the correct locations. All submissions must be made through the course web site; emailed submissions will not be accepted. Grades and comments will be returned through the course web site. Late assignments will be accepted with (-10%) per late day, up to three days, then (-100%). Your lowest homework score will be dropped in the computation of your course grade.

2. 30% - Midterm Exam Monday 8/03/2020 (Online D2L 5:00pm-9:00pm)

3. 30% - Final Exam Thursday 8/20/2020 (Online D2L 5:00pm-9:00pm).

You can choose to do a final project of your choice related to what we covered in this class to replace your final exam. More info and topics about the project will be discuss on D2L.

If you do not take both the midterm and final exams, you will automatically receive a grade of F for the course. Furthermore, everyone must take the midterm and final exams at the scheduled times -- as a rule, no make-up exams will be given. If you wish to petition for a make-up exam in an emergency, you must contact me in advance and provide written documentation of the emergency.

Letter Grades

| | | | |
|----|--------|----|-------|
| A | 90-100 | C | 70-76 |
| A- | 88-89 | C- | 68-69 |
| B+ | 86-87 | D+ | 66-67 |
| B | 80-85 | D | 63-65 |
| B- | 78-79 | D- | 60-62 |
| C+ | 76-77 | F | 0-59 |

Others

- All assignment descriptions with complete instructions will be posted only on the course web pages on D2L.
- Each assignment will have a specific due date and time. Check the D2L frequently for assignments and announcements.
- Make sure you read the assignment description carefully, including the directions on how to submit the assignment. All assignment submissions will be done using D2L.
- Late assignments will be accepted with (-10%) per late day, up to three days, then (-100%). Your lowest homework score will be dropped in the computation of your course grade.
- Make-up examinations of any kind will not be given. If there is an extreme emergency, you must contact me before the examination takes place.

Email Communication

Please begin the subject line of any email to me with “CSC 352” or “CSC 452” so that I can easily identify your messages. I will reply to email messages within one business day after the day I receive them, therefore questions that are only received by me on an assignment’s due date are not guaranteed replies before the assignment is due. Please plan accordingly and begin the assignments early enough to ask questions and receive answers. If you are having problems, send me a detailed description of the problems you are having; I will guide you in locating and solving your problems yourself, rather than simply solve your problems for you. For general questions, please consult the course syllabus, course announcements, and course discussion forum on the course web site for answers before emailing me.

Please do not use the comment field of the assignment submission system to send me questions.

Electronic Devices in the Virtual Meetings

To not distract your fellow students, please turn off and put away all electronic devices not used for course work during meetings. Laptops, tablets, etc. that are used exclusively for note-taking or other course-related activities are allowed. Please refrain from emailing, texting, game playing, web browsing, and other activities not related to course work during meetings.

If you bring a cell phone to meeting, it must be off or set to a silent mode. Should you need to answer an emergency call during meeting, students must leave the virtual room in an undistruptive manner.

Online Sections

This section CSC 452-510/CSC 352-510 is taking place totally online with some meetings as needed to go over your questions and concerns at a specific time on a specific day, with the instructor and all the students meeting online using a synchronous meeting tool like Zoom. Before selecting this option, please carefully consider your ability to actively participate in video and audio with a reliable internet connection.

Changes to Syllabus

This syllabus is subject to change as necessary during the quarter. If that occurs, reasons for the change and options available to students will be thoroughly addressed on the course D2L site. Changes are not made lightly as this syllabus is considered a contract between instructor and student.

Use of Class Material:

Course materials are to be used only by the students in this class and cannot be redistributed in paper form or on the internet via any websites. This includes course lectures, homework questions, homework answers, the midterm, final, or any articles presented in class or for homework.

Incomplete and FX Grades:

Grades of Incomplete are given only in cases of medical emergency or other highly unusual emergency situations. Please note that University guidelines require that you must be earning a passing grade at the time you request an incomplete grade. You should have completed most of the course, with at most one or two major forms of evaluation missing. Incompletes revert to an F if they are not resolved within one quarter. DePaul CDM policy also is that all incompletes must be requested by the student using an online form. See CDM grading policies at <http://www.cdm.depaul.edu/Current%20Students/Pages/Grading-Policies.aspx>

An FX grade is defined as: "Student stopped academic activity before the end of the sixth week (or the equivalent of the first 60%) of the term. Students are advised to contact DePaul Central to initiate the FX to a WA. If the FX is not changed to a WA, it will be factored into the student's GPA in the same way an F would be."

Online Course Evaluations

Evaluations are a way for students to provide valuable feedback regarding their instructor and the course. Detailed feedback will enable the instructor to continuously tailor teaching methods and course content to meet the learning goals of the course and the academic needs of the students. They are a requirement of the course and are key to continue to provide you with the highest quality of teaching. The evaluations are anonymous; the instructor and administration do not track who entered what responses. A program is used to check if the student completed the evaluations, but the evaluation is

completely separate from the student's identity. Since 100% participation is our goal, students are sent periodic reminders over three weeks. Students do not receive reminders once they complete the evaluation. Students complete the evaluation online in [CampusConnect](#).

Academic Integrity and Plagiarism

Students should be fully aware of the strong consequences resulting in stealing the work of others for papers or presentations i.e. plagiarism. Please consult the Code of Student Responsibility for more information. When proven, plagiarism can result in an automatic failure of the course and possible expulsion from DePaul.

You may always discuss the course material with other students, and you may also discuss assignments at a general level. However, when completing your assignments, you must work individually and neither share your solutions with other students nor consult other students' solutions. Any assignment you submit must be entirely your own individual work.

Dean of Students Resources

The Dean of Students Office (DOS) helps students in navigating the university, particularly during difficult situations, such as personal, financial, medical, and/or family crises. Absence Notifications to faculty, personal or medical Late Withdrawals, and Community Resource Referrals, support students both in and outside of the classroom. Additionally, we have resources and programs to support health and wellness, violence prevention, substance abuse and drug prevention, and LGBTQA student services. DOS is committed to your success as a DePaul student. Please visit DOS at <http://studentaffairs.depaul.edu/dos/>.

Students with Disabilities

DePaul's Center for Students with Disabilities (CSD) coordinates DePaul University's provision of accommodations and other services to students with documented disabilities in accordance with the Americans with Disabilities Act and Section 504 of the Rehabilitation Act. CSD regularly works with students diagnosed with a range of disabilities such as learning disabilities, AD/HD, autism spectrum, medical conditions, chronic illness, mental health disorders, and physical and sensory impairments, amongst others. All CSD programs and services are free of charge with the exception of a modest fee for students requesting weekly clinician services. Students are encouraged to contact CSD to initiate the enrollment process well before beginning your first term at DePaul. This will enable students to be well-organized from the onset of the term and assist success. Please consult <http://studentaffairs.depaul.edu/csd/> for more information.