SUBJECT OUTLINE

UNIVERSITY OF TECHNOLOGY SYDNEY

31253 Database Programming

Course area UTS: Engineering and Information Technology

Delivery Autumn 2012; City

Credit points 6cp

Requisite(s) 31271 Database Fundamentals OR 31061 Database Principles OR 31474 Database Fundamentals OR 31487 Database Management Systems

Result type Grade and marks

Recommended studies: it is assumed that students are familiar with basic database concepts; familiarity with the SQL language is mandatory and previous experience with at least one higher-level programming language is required

Subject coordinator

Laurie Benkovich
Room CB10.04.561 - School of Software, Faculty of Engineering and Information Technology
Phone: 9514 4491; Email: Laurie.**Benkovich**-1@uts.edu.au The subject coordinator may be contacted by email or phone if you have matters of a personal nature to discuss, e.g., illness, study problems, team problems, team re-assignment, or a request for an appointment outside the given consultation hours. All email must bear a meaningful description in the 'Subject' box at the top of the email, beginning with the subject number: e.g., 31253 team problems, 31253 request for late submission due to illness, 31253 I have no team, etc. Please include your student number also so that you can be easily identified. Generally questions regarding assessment and the subject should be raised in the lectures or tutorials. This ensures that all students get the benefit of the information given. Emails that are considered better answered in class may be posted on UTS Online. Students will be encouraged to use the UTSOnline discussion forum to exchange information.

The URL for UTS Online is http://online.uts.edu.au

Subject description

This subject teaches students how to design, develop and evaluate database programming and administration solutions to meet pre-defined quality characteristics of functionality (suitability, security), usability (operability), efficiency (time behaviour, resource utilisation), and maintainability (changeability, testability). Database programming and administration solutions are implemented using Oracle 10G, SQL*Plus and PL/SQL. Concepts, theories and technologies underlying the methods and techniques are introduced and explained as required. Students apply all that they have learnt to develop a small application to solve a database problem.

Subject objectives

By the end of semester students should:

1. Be able to describe the benefits of Database Programming
2. Understand programming constructs available in PL/SQL.
3. Understand how triggers, stored procedures and stored functions and database packages operate.
4. Understand the current development methodology in modern database systems
5. Describe the use of supplied packages in the Oracle database
6. Have a basic understanding of the roles and responsibilities of a database administrator

Contribution to course aims and graduate attributes

Working in a database environment, students gain an understanding of both business practice and technical IT skills, and learn how to apply IT solutions to business challenges.

Teaching and learning strategies

Each week there will be a 2 hour lecture and a 1 hour tutorial/lab. Lab sessions will be used to support the lectures with illustrative examples and exercise.

Content

1. Introduction to Database Programming, revision of SQL and an introduction to SQL*Plus, iSQL*Plus and the development tool SQL Developer
2. PL/SQL language fundamentals, variables and built in functions
3. Database procedures, functions, triggers and packages
4. Error and exception handling
5. File input/output from the database
6. Dynamic SQL.
7. Introduction and awareness of performance tuning
8. Database administration

Program

Week/Session	Dates	Description
1	01 Mar	Lecture: Introductions to the subject and a discussion on expectations Introduction to Oracle 10g, SQL*Plus and iSQL*Plus Revision of SQL Introduction to some important ORACLE 10g SQL features
2	08 Mar	Lecture: Introduction to SQL Developer PL/SQL Fundamentals, Variables, Literals and Built-in Functions Comments, Effective coding Styles Blocks and Scope of Values Compiling and Debugging Tutorial: 1 Assignment 1 given out
3	15 Mar	Lecture: Control Flow IF , ELSIF CASE LOOPS – While, For Loop and Cursor FOR Loop Managing Loops Tutorial: 2
4	22 Mar	Lecture: Database Procedures, Functions, Triggers Parameters in and out Manipulating Procedures through SQL*Plus and through code Calling functions from SQL*Plus and through code Tutorial: 3
5	29 Mar	Lecture: Exceptions – Built in and User Defined Types of Exceptions, behavior Propagation of Exceptions Exception Handling Transactions and Autonomous Transactions Tutorial: 4
6	05 Apr	Lecture: Cursors (Explicit and Implicit) Defining, manipulating, fetching rows from a Cursor Record Types, Table row records. Assigning values to records Tutorial: 5
7	12 Apr	Lecture: Catch-up week Discuss the Assignment 2 Requirements Tutorial: 6 Assign 1 due Assignment 2 given out
-	19 Apr	Faculty Non-Teaching Week

8	26 Apr	Vice-Chancellor's Week
9	03 May	Lecture: Packages Declaring, structure, specification, body data and initialization Public and Private Modules and Variables Tutorial: 7
10	10 May	Lecture: Built in Packages Dynamic SQL DBMS_SQL File Input/Output UTIL_FILE Tutorial: 8
11	17May	Lecture: Database Administration Part 1 Tutorial: 9
12	24 May	Lecture: Database Administration Part 2 Tutorial: 10
13	31 May	Lecture: Performance Tuning, the Optimizer and the explain plan for queries Tutorial: 11 Assign. 2 due
14	07 June	Revision

Assessment

Assessment item 1: Assignment 1

Objective(s): 1 and 2

Weighting: 20%

Task: The Assignment is an individual effort and involves the development of a small application to solve a business problem.

Assessment item 2: Assignment 2

Objective(s): 4 and 5

Weighting: 30%

Task: Assignment 2 will be done in groups of 2 and involves the development of a substantial business application utilizing the tools available in the database system. Assessment and class activities for Assignment 2 will be done in small groups. The contribution of each individual in a group will be monitored throughout the session. Each member of the group will receive an equal mark, however, should the need arise, the mark allocated for individuals within groups can reflect an agreed level of contribution by members of the group. Assignments will be submitted to the lecturer before the lecture begins on the nominated due dates

Further information:	A late penalty will be applied to submitted work unless prior arrangements have been made with the subject coordinator. Details of the late penalties will be included with the descriptions of the assignment item(s). If you miss any part of the assessment through documented sickness or misadventure then you should consult with the subject coordinator.

Assessment item 3: Final Examination

Objective(s):	1 to 6
Weighting:	50%
Task:	The exam is held during the usual semester examination time

Supplementary assessments

There will be no suplementary exam offered for this subject.

Students that may encounter problems which will prevent them from doing the scheduled exam are to contact the lecturer to make alternate arrangements

Minimum requirements

Students must attain 50% of the total exam score to qualify for a pass in this subject. Accordingly, exam scores below 50% will result in a fail with a final grade of X.
Student Attendance:
The Faculty of Engineering and Information Technology expects that students will attend all scheduled sessions for a Subject in which they are enrolled.

Required texts

Prescribed Text 978-0-596-51446-4
Oracle PL/SQL Programming (5th Edition) ISBN 978-0-596-51446-4
by Steven Feuerstein with Bill Pribyl
Published by O'Reilly and Associates Inc.

References

Other References

1. OTN - Oracles On Line Help System
2. Oracle PL/SQL by Example (Third Edition) ISBN 0-13-117261-1

By Benjamin Rosenzweig and Elena Silvestrova Published by Prentice Hall

Academic liaison officer

Academic Liaison Officers (ALOs) are academic staff in each faculty who assist three groups of students:

- students with disabilities and ongoing illnesses
- students who have difficulties in their studies because of their family commitments (e.g. being a primary carer for small children or a family member with a disability)
- students who gained entry through inpUTS Educational Access Scheme or Special Admissions.

ALOs are responsible for determining alternative assessment arrangements for students with disabilities. Students who are requesting adjustments to assessment arrangements because of their disability or illness are requested to see a disability services officer in the Special Needs Service before they see their ALO.

The ALO for IT students is:

Dr Julia Prior
telephone: +61 2 9514 4480
email: Julia.Prior@uts.edu.au

Support

Students should email the Subject Coordinator as soon as possible (and prior to the assessment deadline) to make

them aware of the impact on them meeting assessment component/requirements, and that they are seeking assistance through UTS Special Needs as detailed in Section 5.1.3 of Procedures.

Improve your academic and English language skills: HELPS (Higher Education Language and Presentation Support) Service provides assistance with English language proficiency and academic language. Students who need to develop their written and/or spoken English should make use of the free services offered by HELPS, including academic language workshops, vacation intensive courses, drop-in consultations, individual appointments and Conversations@UTS (www.ssu.uts.edu.au/helps). HELPS is located in Student Services, on level 3 building 1 at City campus and via the Student Services area at Kuring-gai campus. Phone 9514-2327 or 9514-2361.

The Faculty of Engineering and IT intranet (MyFEIT: http://my.feit.uts.edu.au/myfeit) and the Faculty Student Guide (http://my.feit.uts.edu.au/modules/myfeit/downloads/StudentGuide_Online.pdf) provide extensive information about the services and support available to students within the Faculty.

Disclaimer

This outline serves as a supplement to the Faculty of Engineering and Information Technology Student Guide. On all matters not specifically covered in this outline, the requirements specified in the Student Guide apply.