THE UNIVERSITY OF AUCKLAND
Te Whare Wānanga o Tāmaki Makaurau
NEW ZEALAND

BUSINESS SCHOOL

Course Outline 2017
INFOSYS 330: DATABASES AND BUSINESS INTELLIGENCE (15 POINTS)
Semester 1 (1173)

Course Prescription

Identification and analysis of opportunities to improve business processes using innovative methods based in data analytics. Comprises three main components: data cleansing and management data retrieval, and data analytics. Case-studies will provide a practical perspective.

Programme and Course Advice

Prerequisite: INFOMGMT 292 or INFOSYS 222 and one of the following - INFOMGMT 192, INFOSYS 280, COMPSCI 101 or equivalent

Goals of the Course

- **Design & Development**

  To design and develop a solution to provide required data analytics for a given business problem; and to consolidate and extend information modelling skills.

- **Implementation & Performance Tuning Issues & Strategies**

  To explore advanced database management concepts such as database security, transaction management, concurrency control,); query processing query optimisation, performance tuning etc., as applicable to any database but using SQL Server 2008 for hands-on experience. Knowledge of SQL Server will be required (and given within the course) to do the assignments.

- **Information Retrieval**

  To build on general learning about databases students have gained from studying INFOSYS222; to learn how to interact with a database, using programming-language embedded SQL (T-SQL) that will enable automated business applications; to develop an understanding of data warehousing, data mining and business intelligence; and to gain hands-on experience through laboratory work and assignments.

Learning Outcomes

By the end of this course it is expected that the student will be able to:

1. design and implement a database with the confidence of an expert;
2. write advanced SQL including stored procedures and triggers; optimise queries;
3. understand database architectures in-depth;
4. define policies and manage security, access control, backup, and disaster recovery for high availability;
5. understand and implement performance tuning strategies to improve efficiency of a database;
6. design and implement a Data Warehouse;
7. understand and know how to use Data Mining; and

8. produce accurate and efficient information models and reports using business intelligence and visualisation.

Content Outline

Lectures will cover the following themes:

Week 01 Advanced concepts of ERD; the relational model and relational algebra;
Week 02 SQL basics; T-SQL Programming constructs;
Week 03 T-SQL procedures and functions; query optimisation; indexes; metadata;
Week 04 T-SQL review; transition management & concurrency control;
Week 05 data warehousing;
Week 06 data mining; OLAP;
Week 07 business intelligence;
Week 08 business intelligence & visualisation;
Week 09 SQL Server Architecture; database administration;
Week 10 authorisation; disaster recovery;
Week 11 Strategies of performance tuning for high availability, scalability and replication;
Week 12 DBA-developing policies, data storage management, emerging and converging technologies - a brief overview and revision.

Learning and Teaching

Teaching arrangements for this course are indicated in the following way: **Three** Lecture hours per week, and one **Two** hour lab.

Labs

Labs begin in week 2.

Teaching Staff

Dr Ami Peiris
Office: Room 468, Owen G Glen Building (level 4)
Tel: 373 7599 (extn. 85988)
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Learning Resources

The course will be very practical and focused on Microsoft SQL Server 2008. Recommended readings will be made available with each lecture from e-books and research publications.

Software - Microsoft SQL Server 2008

This course is part of the Microsoft Academic Alliance which gives the students to the Microsoft suite of development tools including SQL Server 2008; the content of this course could be used as the basis for beginning study for the Microsoft Certified Engineer exams. These exams are not organised by the University refer to www.microsoft.com

Assessment

Course Work and Exam

Students are advised that to pass this course, passes (50%) in **BOTH** the **coursework** and the **exam** are required.

Assignments

Assignments must be typed with diagrams created using the application(s) specified in the assignment instructions. Free-hand writing or drawings will not be marked. All assignments will be completed individually i.e. there are no group assignments in this course.

Assessment Outline

Course Work	**50% (must pass)**
Assignment 0 (checking pre-requisites)	**0%**
Assignment 1 (Data Warehousing)	15%
Assignment 2 (T-SQL)	15%
Assignment 3 (Business Intelligence)	20%
Exam	**50% (must pass)**
Total	**100%**

The broad relationship between these assessments and the course learning outcomes is as follows:

Learning Outcomes	Assignment 1	Assignment 2	Assignment 3	Labs (not assessed)	Exam
1	X	X		X	X
2	X	X		X	X
3	X	X		X	X
4					X
5					X
6	X			X	X
7			X	X	X
8					X

Exam Format - Format of the final exam will be announced in the lectures and on Cecil.

Submission:

All assignment material is to be submitted both electronically and where required in hard-copy to the OGGB assignment drop boxes.

INCLUSIVE LEARNING

Students are urged to discuss privately any impairment-related requirements face-to-face and/or in written form with the course convenor/lecturer and/or tutor.

STUDENT FEEDBACK

Please note that you will be asked to complete evaluations (course, teaching and tutoring) at the end of the course. In the last few years, the evaluations received for this course has been excellent and have shaped this course for what it is today. The course is said to have a good balance as it is has a managerial focus with a technical orientation. Any suggestions by you are welcome at any time.