OVERVIEW

Introduction
Students will be introduced to concepts and techniques necessary for the effective organization, manipulation (including efficient query and update), and analysis of shared data. Students will learn how to apply these concepts with an emphasis on databases and spreadsheets. XML and SQL are introduced as commonly used languages to manage data. Database management approaches and functions are covered as well as database administration. Students will be introduced to a range of special topics related to data storage and databases.

Prior Learning
This unit does not have any formal prerequisites. However, students need to navigate the website for the unit and manipulate various software packages using the keyboard and drop down menus.

Students who do not have the basic skills required to "surf" the web or to use a computer keyboard and drop down menus (at about the level required to use a simple word processor) will need to spend extra time early in the semester learning these (simple) skills.

Learning Outcomes
On successful completion of this unit, you will be able to:

1. Define and use correctly technical terms used in the ICT industry that are related to the storage, processing, and management of data.
2. Explain the roles and importance of measurement, estimation, and calculation in the...
storage and management of data.

3. Demonstrate appropriate use of a standard spreadsheet program (e.g., Excel) to produce a profile of stored data including:
   - measures of central tendency
   - measures of spread
   - graphical representation

4. Write commands (in SQL or similar) to query and manipulate data in an existing relational database.

5. Analyse a simple data storage problem and design and implement a suitable normalised relational database to manage the data.

6. Describe (with examples) ways in which XML (Extensible Markup Language) can be used as a data management tool.

7. Apply your knowledge of XML to create XML documents that are well-formed and valid.

8. Describe and briefly discuss selected advanced database topics such as distributed databases, database interfaces, geographical information systems (GIS).

**Unit Content**

**Stored data basics**
- Concepts and terms
- Measurement and estimation
- Data analysis and profiling
- Data visualisation

**Databases**
- Essential database operations
- Implementation of databases - simple techniques
- Relational databases
  - modelling
  - normalisation
  - implementation
  - SQL

**Data representation using XML**
- Components of XML
- XML data definitions and schemas
- Transformation of XML documents (XSLT)
- Usage of XML
  - data transfer
  - XML databases

**Special Topics**  (There will be a brief introduction to some or all of these topics.)
- Geographical Information Systems
- Semantic web
- Distributed databases
- Data Warehousing and data mining
- Associative databases
- Database interfaces

For more information see the section titled 'Content' on the unit website.

**Generic Skills**

The university has defined a set of generic graduate attributes expected in its graduates. [http://www.utas.edu.au/policy/subject.html#graduates](http://www.utas.edu.au/policy/subject.html#graduates) Your course is designed to enable you to develop generic skills that are valued in, and expected of, graduates. These are skills that you will need to develop over time. Hence you are encouraged to look for opportunities, as you study each unit, to reflect on and improve these skills.

In this unit the following skills are specifically targeted:

**Knowledge:** Students will learn concepts and techniques fundamental to data storage and manipulation in many different application areas.

**Communication Skills:** Students will learn techniques to use to summarise complex data so that the meaning may be readily communicated to a wide range of users.

**LEARNING AND TEACHING**

**Approach to Learning**

You are expected to spend about 130 hrs studying in this unit - this includes attendance at scheduled teaching sessions. (For a 13 week semester this is, on average, 10 hr/wk.) This is the amount of study time that the 'typical' student will need to reach the level of competence and understanding required to fulfil the unit objectives.

You are expected to:
You are encouraged to read the university's *Code of Conduct for Teaching and Learning*. Part A describes the 'Responsibility of the University to Students' and part B describes the 'Responsibilities of Students to the University'. [http://www.utas.edu.au/tl/policies/codes.html](http://www.utas.edu.au/tl/policies/codes.html)

### Schedule

See the 'Schedule' section on the unit website.

### Teaching and Support Staff

#### Teaching Staff

**Unit Coordinator:**

Robyn Gibson  
E-Mail: R.Gibson@utas.edu.au  
Phone: (03) 6324 3461  
Room: V121, Newnham Campus, Launceston

**School Help Desk**

Contact the School Help Desk if you have any queries or problems with accessing, using, or printing from the computers in the School of Computing labs.

- **Hobart**: the Help Desk is located near the School's reception desk and is open from 10am - 4pm Monday-Friday. The phone number is 6226 2960.
- **Launceston**: the Help Desk is located near the entrance to the computing labs and is open in the morning from 10am - 12pm, and in the afternoon from 2pm - 4:30pm, Monday-Thursday. On Fridays it is open from 10am - 12pm in the morning and 2pm - 4pm in the afternoon. The phone number is 6324 3447.
- **Burnie**: the computer labs at the NWC are maintained by ITS. Please contact the University Help Desk for assistance. The 6 Macs are maintained by the School of Computing. If you have a query or problem that is specific to the School of Computing please phone the School of Computing Help Desk in Launceston.

### University Services and Support

The University has staff available to assist you, such as the:

- Learning Development Advisor  
- Student Counselor  
- Careers Advisor  
- Disability Officer

For more information and contact details see the Services and Support section on the University 'Current Students' web page. [http://www.utas.edu.au/students/](http://www.utas.edu.au/students/)

### Resources

#### Unit Website

The unit website contains unit information and resources.

Electronic versions of printed material provided in classes will be placed on the web site at about the same time as the material is distributed in class. This is a new unit, new material (eg administrative information, lecture overheads, references etc) will be placed on the website throughout semester.  
Video recordings of lectures delivered in Launceston and (by video link) to the Cradel Coast Campus will be made available on the web site when this is technically possible.

This unit is classified as 'Web dependent: content' because students will need to use the web site for the following things:

- Viewing notices about the unit eg. administrative notices, assignment clarifications or hints  
- Finding information about (and links to) the online reference materials used in the unit.

#### Prescribed Text

There is no prescribed text book for this unit. Instead students will be referred to a number of online reference materials. Information about these materials (and link wherever possible) will be placed on the unit web site.

#### Software
The software that you will need to access the unit website and to study this unit, including general purpose software such as word processors, is provided on the computers in the School's computing labs. If you intend to use software on other computers please check that the versions are compatible.

**Computing Facilities**

The School has PC labs (Windows XP), Mac labs (Mac OS-X 10.4), and Networking labs at the Newnham and Sandy Bay campuses. It also maintains 6 Macs (Mac OS-X 10.4) at the NW Centre. Unix accounts can be accessed from all Macs and PCs.

If you have not used these facilities before please contact the School Help Desk to organise your account details. If you would like to access the facilities at the Newnham and Sandy Bay campuses after hours please contact the School Help Desk.

Please contact the School Help Desk if you have difficulty accessing or using these facilities.

**Use of Facilities**

Use of computing facilities provided by the School is subject to the School's Ethics Guidelines - [http://www.comp.utas.edu.au/app/ethics.jsp](http://www.comp.utas.edu.au/app/ethics.jsp). Copies of the guidelines are also available in all School labs. The School's facilities may only be used for study-related purposes, and may not be used for personal gain. The playing of games is strictly prohibited in all labs at all times. Before being granted access to the School's facilities, you will be required to sign a declaration that you have read and understand these guidelines, and that you will abide by them. Disciplinary action may be taken against students who violate the guidelines.

**Occupational Health and Safety**

The university is committed to providing a safe and secure teaching and learning environment. For more information see [http://www.admin.utas.edu.au/hr/ohs/pol Proc/](http://www.admin.utas.edu.au/hr/ohs/pol Proc/)

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### ASSESSMENT

**Assessment Items**

**Item 1**

**Title:** Tutorial participation  
**Type:** In-Semester - learning tasks  
**Weighting:** 10%  
**Due:** throughout semester

Students are expected to attend and participate in all tutorials. Satisfactory participation in a tutorial requires a student to be in class for the whole of the class time and to show evidence of the work they have done in the tutorial to the tutor before leaving the tutorial room.  
Students who demonstrate satisfactory participation in at least 8 tutorials will receive a mark of 10/10 for this component.  
Students who demonstrate satisfactory participation in at least 6 tutorials will receive 5/10 for this component.  
Students who do not demonstrate satisfactory participation in at least 6 tutorials will receive 0/10 for this component.

**Item 2**

**Title:** Assignment 1 - Data analysis and profiling  
**Type:** In-Semester - individual assignment  
**Weighting:** 10%  
**Due:** 3pm Monday 21 August, 2006 (start of week 6)

Students will complete a task that demonstrates their competence at producing an analysis and profile of a given set of data.

**Item 3**

**Title:** Assignment 2 - databases  
**Type:** In-Semester - individual assignment  
**Weighting:** 10%  
**Due:** 3pm Monday 25 September, 2006 (start of week 10)

Students will complete a task that demonstrates a knowledge of the theory of relational databases and an application of the theory to a given set of data.
Item 4

**Title:** Assignment 3 - XML  
**Type:** In-Semester - individual assignment  
**Weighting:** 10%  
**Due:** 3pm Monday 23 October, 2006 (start of study week)

Students will complete a task that demonstrates a knowledge of the principles and practice of using XML to manipulate a given set of data.

Item 5

**Title:** Final examination  
**Type:** Formal Examination  
**Weighting:** 60%  
**Due:** University Examination Period

Students will be provided with information about the format of the examination before the end of semester.

See the 'Assessment' section in unit website for more detailed information about assessment items.

**In-Semester Assessment**

Unless specifically stated in the specification of the assessment item provided on the unit website, it is required that:

- work submitted by a student is the work of that student alone OR
- where the assessment item is to be completed by a group of students, the work submitted by the group of students is the work of that group of students alone.

**Plagiarism**

Plagiarism is a form of cheating. It is taking and using someone else's thoughts, writings or inventions and representing them as your own, for example:

- using an author's words without putting them in quotation marks and citing the source;
- using an author's ideas without proper acknowledgment and citation; or
- copying another student's work.

**If you have any doubts about how to refer to the work of others in your assignments, please consult your lecturer or tutor** for relevant referencing guidelines, and the academic integrity resources on the web at [http://www.utas.edu.au/tl/supporting/academicintegrity/index.html](http://www.utas.edu.au/tl/supporting/academicintegrity/index.html).

The intentional copying of someone else's work as one's own is a serious offence punishable by penalties that may range from a fine or deduction/cancellation of marks and, in the most serious of cases, to exclusion from a unit, a course or the University. Details of penalties that can be imposed are available in the Ordinance of Student Discipline – Part 3 Academic Misconduct, see [http://www.utas.edu.au/policy/subject.html#students](http://www.utas.edu.au/policy/subject.html#students).

The University reserves the right to submit assignments to plagiarism detection software, and might then retain a copy of the assignment on its database for the purpose of future plagiarism checking.

**Referencing**

The university document on plagiarism contains information about referencing the work or ideas of others. (See [http://www.utas.edu.au/plagiarism/](http://www.utas.edu.au/plagiarism/).) The preferred text referencing systems for the School is the Harvard system (also referred to as the author-date system).

**Submissions**

The details of the submission method (paper, electronic or other) for each assignment will be supplied in a separate assignment specification sheet. All in-semester assignment submissions (including electronic submissions) are to include an Assignment Cover Sheet which includes a statement confirming that the submission is your own work. If this undertaking is not signed, the assignment will not be marked. The Assignment Cover Sheet is available from the School Help Desk in Launceston and Hobart, and on the School's web site [http://www.comp.utas.edu.au/app/studyresources.jsp](http://www.comp.utas.edu.au/app/studyresources.jsp).

**Extensions and Penalties**

Assessment items will not be accepted after the due date except under the conditions stated in the school policy on late assessment. [http://www.comp.utas.edu.au/app/late_assess.jsp](http://www.comp.utas.edu.au/app/late_assess.jsp)

**Formal**

The formal examination is conducted by the University Registrar. The 'Current Students' section...
Examination

on the university website contains information about the conduct of, and timetable for, formal examinations.

Final Grade

Overall assessment will be based on the student's performance throughout the semester as well as in a formal examination. In order to achieve a pass (or better) result, a student must obtain:

1. at least 45% of the total mark for in-semester assessment items
2. at least 45% of the mark for the formal examination
3. at least 50% of the overall mark

In order to comply with the benchmarks set by the Faculty of Science, Engineering & Technology for distribution of grades in units, both the in-semester and examination marks that students obtain may be adjusted either upwards or downwards. See http://fcms.its.utas.edu.au/scieng/scieng/policies.asp for details of the Faculty Assessment Guidelines.

Passing grades will be awarded based on the AVCC guidelines:

- PP at least 50% of the overall mark but less than 60%
- CR at least 60% of the overall mark but less than 70%
- DN at least 70% of the overall mark but less than 80%
- HD at least 80% of the overall mark

The maximum mark awarded to a student who fails the unit will be 44.

For more information, including other grades such as Supplementary and Terminating grades, see the School of Computing's guidelines for assessment - available at: http://www.comp.utas.edu.au/app/assess.jsp