



MONASH University

FIT3003
Business intelligence and data warehousing

Unit guide

Semester 2, 2008

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FIT3003 Business intelligence and data warehousing - Semester 2 , 2008

Unit leader :

Damminda Alahakoon

Lecturer(s) :

Clayton

- Damminda Alahakoon

Tutors(s) :

Clayton

- Daswin DeSilva
- Jeewanee Bamunusinghe

Introduction

Welcome to FIT3003 Business Intelligence and Data Warehousing for semester 2, 2008. This is 6 point core unit in the Bachelor of Business Information Systems degree.

Unit synopsis

ASCED Discipline Group Classification: 020307 Decision Support Systems.

This unit provides students with an understanding of Business Intelligence (BI) systems and the infrastructure needed to support them. In the past decade, business organisations have used a variety of tools to analyse their data. On-line analytical processing (OLAP) tools, data mining and other data analysis techniques are being used to obtain value from data in ways not possible with earlier tools. These Business Intelligence tools provide high quality information to organisational decision makers in a variety of formats, and often require a consolidated source of data in the form of a data warehouse. Topics covered include the nature and purpose of BI, the relationship between BI and data warehousing, design issues related to BI tools and data warehouses, and common data analysis techniques such as OLAP, data mining and other computational techniques. The differences between these kinds of systems and other, more traditional information systems will be highlighted.

Learning outcomes

(a) To acquire the **Knowledge and Understanding of:**

- Role of Data Warehousing (DW) as opposed to operational databases
- The definition and the need of Business intelligence (BI)
- DW development methodology
- Dimensional models compared to ER models
- BUS architecture
- DW architectures, ETL and data quality issues
- How DW can support BI
- BI tools, techniques and OLAP
- Data Mining (DM) techniques
- Data Mining Tools

(b) To develop the following **Attitudes, Values and Beliefs:**

- Recognise the value of DW and BI for a business organization
- Adapt a critical approach to DW and BI technology in a business context
- Appreciate the value of DW for effective management support and decision making
- Understand the importance and value of BI tool and techniques compared to traditional data analysis techniques
- Appreciate the value BI tools and DM for providing knowledge for decision making, in ways unavailable with traditional techniques

(c) To develop the following **Practical Skills:**

- Create dimensional models
- Create DW architectures suitable for different organizations and requirements
- Interpret results from OLAP and dimensional models
- Create data analysis models using BI tools
- Interpret results from BI and DM tools

(d) In addition, it is expected that the following **Relationships, Communication and Team Work skills** will be developed and enhanced:

- Document and communicate DW architectures and BI techniques
- Work in a team during DW architecture design and BI model development
- Communicate and coordinate during the team activities
- Communicate results from data mining exercises

Workload

Workload commitments are:

- * two-hour lecture and
- * two-hour tutorial (or laboratory) (requiring advance preparation)
- * a minimum of 2-3 hours of personal study per one hour of contact time in order to satisfy the reading and assignment expectations.

You will need to allocate up to 5 hours per week in some weeks, for use of a computer, including time for newsgroups/discussion groups.

Unit relationships

Prerequisites

One of FIT1004, FIT2010, FIT1013 (BUS1010), BUS3112, CSE2316/3316, or equivalent.

Relationships

FIT3003 is a core unit in the Bachelor of Business Information Systems.

Continuous improvement

Monash is committed to 'Excellence in education' and strives for the highest possible quality in teaching and learning. To monitor how successful we are in providing quality teaching and learning Monash regularly seeks feedback from students, employers and staff. Two of the formal ways that you are invited to provide feedback are through Unit Evaluations and through Monquest Teaching Evaluations.

One of the key formal ways students have to provide feedback is through Unit Evaluation Surveys. It is Monash policy for every unit offered to be evaluated each year. Students are strongly encouraged to complete the surveys as they are an important avenue for students to "have their say". The feedback is anonymous and provides the Faculty with evidence of aspects that students are satisfied and areas for improvement.

Student Evaluations

The Faculty of IT administers the Unit Evaluation surveys online through the my.monash portal, although for some smaller classes there may be alternative evaluations conducted in class.

If you wish to view how previous students rated this unit, please go to <http://www.monash.edu.au/unit-evaluation-reports/>

Over the past few years the Faculty of Information Technology has made a number of improvements to its courses as a result of unit evaluation feedback. Some of these include systematic analysis and planning of unit improvements, and consistent assignment return guidelines.

Monquest Teaching Evaluation surveys may be used by some of your academic staff this semester. They are administered by the Centre for Higher Education Quality (CHEQ) and may be completed in class with a facilitator or on-line through the my.monash portal. The data provided to lecturers is completely anonymous. Monquest surveys provide academic staff with evidence of the effectiveness of their teaching and identify areas for improvement. Individual Monquest reports are confidential, however, you can see the summary results of Monquest evaluations for 2006 at <http://www.adm.monash.edu.au/cheq/evaluations/monquest/profiles/index.html>

Improvements to this unit

This Unit is being taught for the first time in S2, 2008

Unit staff - contact details

Unit leader

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Postgraduate Student

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Additional communication information

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Teaching and learning method

The unit will be delivered via lectures and laboratories.

Lecture: During the lecture, your lecturer will introduce key theoretical concepts and demonstrate various approaches to database tasks. The time in lectures is quite brief, please ensure you gain the best advantage from this time by:

Prior to the lecture:

- reading the study guide for the appropriate week, and
- downloading and reading the lecture notes,

During the lecture ensuring that you:

- annotate a printed set of lecture notes as the lecture proceeds, and
- participate, question, seek clarification

After the lecture:

- read over you notes and make sure you understand the concepts
- seek help if you are unsure

Tutorial allocation

On-campus students should register for tutorials/laboratories using Allocate+.

Communication, participation and feedback

Monash aims to provide a learning environment in which students receive a range of ongoing feedback throughout their studies. You will receive feedback on your work and progress in this unit. This may take the form of group feedback, individual feedback, peer feedback, self-comparison, verbal and written feedback, discussions (on line and in class) as well as more formal feedback related to assignment marks and grades. You are encouraged to draw on a variety of feedback to enhance your learning.

It is essential that you take action immediately if you realise that you have a problem that is affecting your study. Semesters are short, so we can help you best if you let us know as soon as problems arise. Regardless of whether the problem is related directly to your progress in the unit, if it is likely to interfere with your progress you should discuss it with your lecturer or a Community Service counsellor as soon as possible.

Unit Schedule

Week	Topic	Key dates
1	Introduction to Data Warehousing	
2	Introduction to Data Warehousing with SQL Server 2005	
3	Data Warehouse Modeling	
4	Extract - Transform - Load	
5	Populating a Data warehouse and Reporting	
6	OLAP	
7	Data Mining with Statistics	
8	Decision Trees	Assignment 1 due.
9	Neural Networks and Data Mining	
10	Collaborative Filtering	
11	User Profiling	
Mid semester break		

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12	CRM and Customer Management	Assignment 2 due.
13	Revision	

Unit Resources

Prescribed text(s) and readings

Berry M, Linoff M. "Data Mining Techniques", John Wiley & Sons, 2004 Text books are available from the Monash University Book Shops. Availability from other suppliers cannot be assured. The Bookshop orders texts in specifically for this unit. You are advised to purchase your text book early.

Recommended text(s) and readings

Kimball R, "Data warehousing toolkit" 2nd Edition, John Wiley & Sons, 2002

Inmon W. H. "Building the Data warehouse" 2nd Edition, John Wiley & Sons, 2002

Vitt E, Luckevich M, Misner S, "Business intelligence", 2002

Required software and/or hardware

SQL Server 2005

WEKA data mining software

Equipment and consumables required or provided

Students studying off-campus are required to have the minimum system configuration specified by the Faculty as a condition of accepting admission, and regular Internet access. On-campus students, and those studying at supported study locations may use the facilities available in the computing labs. Information about computer use for students is available from the ITS Student Resource Guide in the Monash University Handbook. You will need to allocate up to **n** hours per week for use of a computer, including time for newsgroups/discussion groups.

Study resources

Study resources we will provide for your study are:

Study resources we will provide for your study are:

- * Weekly detailed lecture notes outlining the learning objectives, discussion of the content, required readings and exercises;
- * Weekly tutorial or laboratory tasks and exercises with sample solutions provided one to two weeks later;
- * Assignment specifications and sample solutions;
- * A sample examination and suggested solution
- * This Unit Guide outlining the administrative information for the unit;
- * The unit web site on MUSO, where resources outlined above will be made available.

Library access

The Monash University Library site contains details about borrowing rights and catalogue searching. To learn more about the library and the various resources available, please go to <http://www.lib.monash.edu.au>. Be sure to obtain a copy of the Library Guide, and if necessary, the instructions for remote access from the library website.

Monash University Studies Online (MUSO)

All unit and lecture materials are available through MUSO (Monash University Studies Online). Blackboard is the primary application used to deliver your unit resources. Some units will be piloted in Moodle. If your unit is piloted in Moodle, you will see a link from your Blackboard unit to Moodle (<http://moodle.monash.edu.au>) and can bookmark this link to access directly. In Moodle, from the Faculty of Information Technology category, click on the link for your unit.

You can access MUSO and Blackboard via the portal: <http://my.monash.edu.au>

Click on the Study and enrolment tab, then Blackboard under the MUSO learning systems.

In order for your Blackboard unit(s) to function correctly, your computer needs to be correctly configured.

For example:

- Blackboard supported browser
- Supported Java runtime environment

For more information, please visit: <http://www.monash.edu.au/muso/support/students/downloadables-student.html>

You can contact the MUSO Support by: Phone: (+61 3) 9903 1268

For further contact information including operational hours, please visit:
<http://www.monash.edu.au/muso/support/students/contact.html>

Further information can be obtained from the MUSO support site:
<http://www.monash.edu.au/muso/support/index.html>

Assessment

Unit assessment policy

To pass this unit, a student must obtain :

- 40% or more in the unit's examination and
- 40% or more in the unit's non-examination assessment and
- an overall unit mark of 50% or more

If a student does not achieve 40% or more in the unit examination or the unit non-examination assessment then a mark of no greater than 44-N will be recorded for the unit.

Assignment tasks

- **Assignment Task**

Title : Assignment 1 - SQL Server and Data Warehousing

Description :

Weighting : 20%

Criteria for assessment :

Due date : Week 8

- **Assignment Task**

Title : Assignment 2 - Data Mining

Description :

Weighting : 20%

Criteria for assessment :

Due date : Week 12

Examinations

- **Examination**

Weighting : 60%

Length : 2 hours

Type (open/closed book) : Closed book

Assignment submission

Assignment submission details will be provided in the assignment.

Assignment coversheets

Assignment coversheets can be found via the "Student assignment coversheets" (<http://infotech.monash.edu.au/resources/student/assignments/>) page on the faculty website or is available on the unit's MUSO site.

University and Faculty policy on assessment

Due dates and extensions

The due dates for the submission of assignments are given in the previous section. Please make every effort to submit work by the due dates. It is your responsibility to structure your study program around assignment deadlines, family, work and other commitments. Factors such as normal work pressures, vacations, etc. are seldom regarded as appropriate reasons for granting extensions. Students are advised to NOT assume that granting of an extension is a matter of course.

Late assignment

Assignments received after the due date will be subject to a penalty of 5% per day, including weekends. Assignments received later than one week (seven days) after the due date will not normally be accepted. In some cases, this period may be shorter if there is a need to release sample solutions.

This policy is strict because comments or guidance will be given on assignments as they are returned, and sample solutions may also be published and distributed, after assignment marking or with the returned assignment.

Return dates

Students can expect assignments to be returned within two weeks of the submission date or after receipt, whichever is later.

Assessment for the unit as a whole is in accordance with the provisions of the Monash University Education Policy at <http://www.policy.monash.edu/policy-bank/academic/education/assessment/>

We will aim to have assignment results made available to you within two weeks after assignment receipt.

Plagiarism, cheating and collusion

Plagiarism and cheating are regarded as very serious offences. In cases where cheating has been confirmed, students have been severely penalised, from losing all marks for an assignment, to facing disciplinary action at the Faculty level. While we would wish that all our students adhere to sound ethical conduct and honesty, I will ask you to acquaint yourself with Student Rights and Responsibilities (<http://www.infotech.monash.edu.au/about/committees-groups/facboard/policies/studrights.html>) and the Faculty regulations that apply to students detected cheating as these will be applied in all detected cases.

In this University, cheating means seeking to obtain an unfair advantage in any examination or any other written or practical work to be submitted or completed by a student for assessment. It includes the use, or attempted use, of any means to gain an unfair advantage for any assessable work in the unit, where the means is contrary to the instructions for such work.

When you submit an individual assessment item, such as a program, a report, an essay, assignment or other piece of work, under your name you are understood to be stating that this is your own work. If a submission is identical with, or similar to, someone else's work, an assumption of cheating may arise. If you are planning on working with another student, it is acceptable to undertake research together, and discuss problems, but it is not acceptable to jointly develop or share solutions unless this is specified by your lecturer.

Intentionally providing students with your solutions to assignments is classified as "assisting to cheat" and students who do this may be subject to disciplinary action. You should take reasonable care that your solution is not accidentally or deliberately obtained by other students. For example, do not leave copies of your work in progress

on the hard drives of shared computers, and do not show your work to other students. If you believe this may have happened, please be sure to contact your lecturer as soon as possible.

Cheating also includes taking into an examination any material contrary to the regulations, including any bilingual dictionary, whether or not with the intention of using it to obtain an advantage.

Plagiarism involves the false representation of another person's ideas, or findings, as your own by either copying material or paraphrasing without citing sources. It is both professional and ethical to reference clearly the ideas and information that you have used from another writer. If the source is not identified, then you have plagiarised work of the other author. Plagiarism is a form of dishonesty that is insulting to the reader and grossly unfair to your student colleagues.

Register of counselling about plagiarism

The university requires faculties to keep a simple and confidential register to record counselling to students about plagiarism (e.g. warnings). The register is accessible to Associate Deans Teaching (or nominees) and, where requested, students concerned have access to their own details in the register. The register is to serve as a record of counselling about the nature of plagiarism, not as a record of allegations; and no provision of appeals in relation to the register is necessary or applicable.

Non-discriminatory language

The Faculty of Information Technology is committed to the use of non-discriminatory language in all forms of communication. Discriminatory language is that which refers in abusive terms to gender, race, age, sexual orientation, citizenship or nationality, ethnic or language background, physical or mental ability, or political or religious views, or which stereotypes groups in an adverse manner. This is not meant to preclude or inhibit legitimate academic debate on any issue; however, the language used in such debate should be non-discriminatory and sensitive to these matters. It is important to avoid the use of discriminatory language in your communications and written work. The most common form of discriminatory language in academic work tends to be in the area of gender inclusiveness. You are, therefore, requested to check for this and to ensure your work and communications are non-discriminatory in all respects.

Students with disabilities

Students with disabilities that may disadvantage them in assessment should seek advice from one of the following before completing assessment tasks and examinations:

- Faculty of Information Technology Student Service staff, and / or
- your Unit Coordinator, or
- Disabilities Liaison Unit

Deferred assessment and special consideration

Deferred assessment (not to be confused with an extension for submission of an assignment) may be granted in cases of extenuating personal circumstances such as serious personal illness or bereavement. Information and forms for Special Consideration and deferred assessment applications are available at <http://www.monash.edu.au/exams/special-consideration.html>. Contact the Faculty's Student Services staff at your campus for further information and advice.