FIT5158
Customer relationship management and data mining

Unit Guide

Semester 1, 2013

Last updated: 15 Mar 2013

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FIT5158 Customer relationship management and data mining - Semester 1, 2013

This unit provides an understanding of the business value of customer relationship management and how data mining technology can be used to improve organizational interaction with customers. Building a business around the customer relationship is the aspiration of many modern organizations. Customer relationship management and data mining has been combined together to provide the required concepts, techniques, technology and tools to achieve this goal. The unit discuss how IT and IT based techniques can be used for customer segmentation, clustering and classification, market basket analysis and association rule mining in addition to traditional CRM.

Mode of Delivery

- Caulfield (Day)
- Sunway (Evening)

Contact Hours

2 hrs lectures/wk, 2 hrs laboratories/wk

Workload requirements

Students will be expected to spend a total of 12 hours per week during semester on this unit.
This will include:

- two-hour lecture and
- a 2-hour class (typically broken up to be a 1-hour tutorial immediately followed by a 1-hour laboratory), typically 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

FIT9004 or FIT9017

Chief Examiner

Associate Professor David Dowe

Campus Lecturer

Caulfield

David Dowe

Consultation hours: To Be Discussed in Lectures and Confirmed

Sunway

Jayantha Rajapakse

Tutors

Caulfield

Mark Ciotola

Lito (Rosalito) Cruz

Academic Overview

Learning Outcomes

At the completion of this unit students will be able to:

- use software tools and techniques for identifying business opportunities;
- plan direct marketing campaigns and product introductions;
- analyse and understand customer churn with data mining tools;
- create stable and accurate predictive models and interpret results;
- provide advise to management on CRM;
- advise management on data mining techniques and tools.

Unit Schedule

Week	Activities	Assessment
0		No formal assessment or activities are undertaken in week 0
1	CRM and Customer Intelligence	No assessment, no tute/lab; good time to practise probability and mathematics
2	Storing Data for Customer Intelligence	First tute/lab, no assessment
3	Data Warehousing with SQL Server 2008	
4	Dimensional Modelling	
5	Data Warehouse and Analytical CRM	Assignment 1 due Week 5, Thursday 11 April 2013
6	Online Analytical Processing	
7	Introduction to Business ``Data Mining''	
8	Customer Relationship Management (CRM)	
9	Decision Trees	
10	Neural Networks	Assignment 2 due Week 10, Thursday 16 May 2013
11	Collaborative Filtering and User Profiling	
12	Customer Life Cycle and Data Mining	
	SWOT VAC	No formal assessment is undertaken in SWOT VAC
	Examination period	LINK to Assessment Policy: http://policy.monash.edu.au/policy-bank/academic/education/assessment/assessment-in-coursework-policy.html

*Unit Schedule details will be maintained and communicated to you via your learning system.

Assessment Summary

Examination (3 hours): 60%; In-semester assessment: 40%

Assessment Task	Value	Due Date
Assignment 1 - SQL Server and Data Warehousing	20%	Week 5, Thursday 11 April 2013
Assignment 2 - ``Data Mining''	20%	Week 10, Thursday 16 May 2013
Examination 1	60%	To be advised

Teaching Approach

Lecture and tutorials or problem classes

This teaching and learning approach provides facilitated learning, practical exploration and peer learning.

Assessment Requirements

Assessment Policy

Faculty Policy - Unit Assessment Hurdles
(http://www.infotech.monash.edu.au/resources/staff/edgov/policies/assessment-examinations/unit-assessment-hu

Academic Integrity - Please see the Demystifying Citing and Referencing tutorial at
http://lib.monash.edu/tutorials/citing/

Assessment Tasks

Participation

- **Assessment task 1**

   Title:
   Assignment 1 - SQL Server and Data Warehousing
   Description:
   As per the title, this might involve some OnLine Analytical Processing (OLAP) and a
   written report. The mathematics should be quite friendly.

   Further details will be provided.
   Weighting:
   20%
   Criteria for assessment:
   Perform some individual practical task based on the content covered in classes. Write
   some sort of report analyzing the given task based on the obtained results.

   Further details will be provided. Where both possible and appropriate, students will be
   encouraged to make relevant mathematical observations. Students might also be
   required to verbally present their work.
   Due date:
   Week 5, Thursday 11 April 2013
   Remarks:
   You will be expected to submit your assignment in both printed hard copy and soft
   electronic copy - unless explicitly told otherwise by both your lecturer and your tutor.

   Your work is expected and required to be your own work. You will be required to attach a
   signed cover sheet at the front. See "Other Information" for the consequences of
   plagiarism, etc.

- **Assessment task 2**

   Title:
   Assignment 2 - ``Data Mining''
   Description:
   As per the title, there will be some analysis of some data, some of which might entail
   varying degrees of mathematics.

   Further details will be provided.
   Weighting:

>   20%
> **Criteria for assessment:**
>   Perform some practical task based on the content covered in classes. Write a business report analyzing the given task based on the obtained results - possibly with some sort of cost-benefit analysis involving some probabilities and other mathematics.
>
>   Further details will be provided. Where both possible and appropriate, students will be encouraged to make relevant mathematical observations. Students might also be required to verbally present their work.
> **Due date:**
>   Week 10, Thursday 16 May 2013
> **Remarks:**
>   You will be expected to submit your assignment in both printed hard copy and soft electronic copy - unless explicitly told otherwise by both your lecturer and your tutor.
>
>   If there is hypothetically any group work, then students would form their groups in class and then - at the end of the assignment - comment on the degree of contribution of the various group members.
>
>   Your work is expected and required to be your own work. You will be required to attach a signed cover sheet at the front. See "Other Information" for the consequences of plagiarism, etc.

Examinations

> • **Examination 1**
>
> **Weighting:**
>   60%
> **Length:**
>   3 hours
> **Type (open/closed book):**
>   Closed book
> **Electronic devices allowed in the exam:**
>   None
> **Remarks:**
>   Students will need to understand the questions and then write clear, coherent and correct answers.

Learning resources

Monash Library Unit Reading List
http://readinglists.lib.monash.edu/index.html

Feedback to you

Types of feedback you can expect to receive in this unit are:

- Informal feedback on progress in labs/tutes
- Graded assignments without comments
- Interviews

Extensions and penalties

Submission must be made by the due date otherwise penalties will be enforced.

You must negotiate any extensions formally with your campus unit leader via the in-semester special consideration process:
http://www.infotech.monash.edu.au/resources/student/equity/special-consideration.html.

Returning assignments

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

Referencing requirements

Students are encouraged but not required to write in LaTeX.

In any event, referencing styles such as any of those used by the Computer Journal, the Artificial Intelligence Journal, the Intelligence Journal, Springer LNAI/LNCS (Lecture Notes in Artificial Intelligence / Lecture Notes in Computer Science), IEEE, Journal of the ACM should be fine.

Make your work readable, intelligible and coherent - and, of course, your own independent work.

Assignment submission

It is a University requirement (http://www.policy.monash.edu/policy-bank/academic/education/conduct/plagiarism-procedures.html) for students to submit an assignment coversheet for each assessment item. Faculty Assignment coversheets can be found at http://www.infotech.monash.edu.au/resources/student/forms/. Please check with your Lecturer on the submission method for your assignment coversheet (e.g. attach a file to the online assignment submission, hand-in a hard copy, or use an online quiz).

Online submission

If Electronic Submission has been approved for your unit, please submit your work via the learning system for this unit, which you can access via links in the my.monash portal.

Required Resources

Please check with your lecturer before purchasing any Required Resources. Limited copies of prescribed texts are available for you to borrow in the library, and prescribed software is available in student labs.

WEKA Data Mining software
SQL Server (2008)
This and other any software needed - such as Minimum Message Length (MML) software for clustering and/or decision trees/graphs - will be made available or provided.

Students should also have at least some degree of mathematical literacy - including, e.g., notions of probability and logarithm.

Recommended Resources

The probabilistic prediction competition at www.csse.monash.edu.au/~footy will be useful practice for understanding and appreciating probabilities.

Students are also encouraged to make the most of the Language and Learning Services - including improving writing skills. See, e.g., www.monash.edu.au/lls/llonline

Other Information

Policies

Monash has educational policies, procedures and guidelines, which are designed to ensure that staff and students are aware of the University's academic standards, and to provide advice on how they might uphold them. You can find Monash's Education Policies at:
www.policy.monash.edu.au/policy-bank/academic/education/index.html

Key educational policies include:

- Plagiarism;
  http://www.policy.monash.edu/policy-bank/academic/education/conduct/plagiarism-policy.html
- Assessment in Coursework Programs;
  http://www.policy.monash.edu/policy-bank/academic/education/assessment/assessment-in-coursework-po
- Special Consideration;
  http://www.policy.monash.edu/policy-bank/academic/education/assessment/special-consideration-policy.ht
- Grading Scale;
  http://www.policy.monash.edu/policy-bank/academic/education/assessment/grading-scale-policy.html
- Discipline: Student Policy;
  http://www.policy.monash.edu/policy-bank/academic/education/conduct/student-discipline-policy.html
- Academic Calendar and Semesters; http://www.monash.edu.au/students/dates/
- Orientation and Transition; http://intranet.monash.edu.au/infotech/resources/students/orientation/
- Academic and Administrative Complaints and Grievances Policy;
  http://www.policy.monash.edu/policy-bank/academic/education/management/complaints-grievance-policy.h
- Code of Practice for Teaching and Learning;
  http://www.policy.monash.edu.au/policy-bank/academic/education/conduct/suppdocs/code-of-practice-tead

Graduate Attributes Policy

http://www.policy.monash.edu/policy-bank/academic/education/management/monash-graduate-attributes-policy.ht

Student services

The University provides many different kinds of support services for you. Contact your tutor if you need advice and see the range of services available at http://www.monash.edu.au/students. For Sunway see http://www.monash.edu.my/Student-services, and for South Africa see http://www.monash.ac.za/current/.

Monash University Library

The Monash University Library provides a range of services, resources and programs that enable you to save time and be more effective in your learning and research. Go to www.lib.monash.edu.au or the library tab in my.monash portal for more information. At Sunway, visit the Library and Learning Commons at http://www.lib.monash.edu.my/. At South Africa visit http://www.lib.monash.ac.za/.

Disability Liaison Unit

Students who have a disability or medical condition are welcome to contact the Disability Liaison Unit to discuss academic support services. Disability Liaison Officers (DLOs) visit all Victorian campuses on a regular basis.

Website: http://www.monash.edu/equity-diversity/disability/index.htmlTelephone: 03 9905 5704 to book an appointment with a DLO; or contact the Student Advisor, Student Commuity Services at 03 55146018 at SunwayEmail: dlu@monash.eduDrop In: Equity and Diversity Centre, Level 1, Building 55, Clayton Campus, or Student Community Services Department, Level 2, Building 2, Monash University, Sunway Campus

Your feedback to Us

Monash is committed to excellence in education and regularly seeks feedback from students, employers and staff. One of the key formal ways students have to provide feedback is through the Student Evaluation of Teaching and Units (SETU) survey. The University's student evaluation policy requires that every unit is evaluated each year. Students are strongly encouraged to complete the surveys. The feedback is anonymous and provides the Faculty with evidence of aspects that students are satisfied and areas for improvement.

For more information on Monash's educational strategy, see:

www.monash.edu.au/about/monash-directions and on student evaluations, see:
www.policy.monash.edu/policy-bank/academic/education/quality/student-evaluation-policy.html

Previous Student Evaluations of this Unit

More mathematical material - such as probability and even logarithms - will be introduced.

The might be more examples introduced in lectures, and the tutorials might be more practical.

If you wish to view how previous students rated this unit, please go to
https://emuapps.monash.edu.au/unitevaluations/index.jsp

Other

Reading List

[Note: "Data mining" should be about more than point, click and colour graphics. Every opportunity that students have to improve their mathematics and statistics will give them a greater understanding of the subject matter.]

"*Managing Customer Relationships: A Strategic Framework*", by D. Peppers and M. Rogers [ISBN-10: 0470423471 | ISBN-13: 978-0470423479], 2nd edition, 2011.

Practical Business Intelligence with SQL Server 2005, by John C. Hancock and Roger Toren, Addison Wesley, 2006

The Microsoft Data Warehouse Toolkit, by Joy Mundy and Warren Thornthwaite, John Wiley & Sons, 2006

Other Information

G K Gupta, *Introduction to Data Mining with Case Studies*, Prentice-Hall of India Private Limited, New Delhi India, 457pp.

C S Wallace (2005), *Statistical and Inductive Inference by Minimum Message Length*, Springer, 432pp. [This reference is heavy mathematically, but it is most probably the future of ``data mining''. Students are encouraged to go beyond point, click and colour graphics and to try to grasp the mathematical probabilistic approach.]

Here are some further references of possible interest:

William H. Inmon, "*Building the data warehouse*", 4th edn, chaps 1 and 2.

Efrain Turban et al., "*Business intelligence: a managerial approach*", chap. 1

Michael Berry and Gordon Linoff, "*Data Mining Techniques*", 2nd edn, chap. 1

Chris Todman, "*Designing a data warehouse supporting CRM*", chaps 1 and 2