MONASH University

FIT2001
Systems analysis and design

Unit Guide

Semester 2, 2009

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FIT2001 Systems analysis and design - Semester 2, 2009

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Introduction

Welcome to FIT2001 Systems Analysis and Design. It is a fun unit to study but it is also very important to your development as a professional in the field of Information Technology.

Every graduate of our Faculty needs to understand the basics of systems analysis and systems design, it is a very important aspect of the work of an information technology professional. As a result this introductory unit on analysis and design is part of the common core that is studied by all undergraduates of the Faculty.

Many students will go on to have careers as systems analysts and systems designers. Even those who don't will work with and for analysts and designers and will need to know what and how they do what they do. One good analogy that is can be used to explain the difference between the work of a programmer from an analyst, is to compare the roles to that of a builder and architect. A builder - like a programmer - does the actual construction work. The architect does the design work - in consultation with a client - and develops a plan that will be implemented by the builder. The architects need to know what builders can and can't do, as well as the various properties and uses of different building materials and techniques. In the same way, an analyst needs to know what a programmer can and can't do and what the available technology is capable of. The builder needs to be able to read and understand the plans that they are provided with so they can create the structure the client wanted. Similiarly, a programmer needs to be able to understand the "plans" called requirements specifications and design specifications that the analysts and designers create. Often, especially earlier in your career, you are very likely to find your self performing both roles as a junior analyst/programmer (a very common graduate job title).

Students who hope to work in more specialised areas like networking, multimedia and games development still need to master the basics of analysis and design. The core of analysis and design is to understand some information problem in some "real" world domain and create a model of that. The model is created in tools that are formal enough to become the basis of the design of an information technology system. However, at the same time they are often graphical so they can be developed with and shared with end-users, who may not be IT-design literate, to ensure that the system developed will meet their needs and provide the intended benefits.

This semester the unit will run on the Caulfield campus.

Unit synopsis

This unit will provide students with an introduction to systems analysis and design and give a broad overview of the main techniques commonly used for carrying out the analysis and specification of the design for an computer system. The unit will introduce students to the nature of systems analysis and design as a problem-solving activity, describe the key elements of analysis and design, and explain the place of the analysis and design phases within the system development life cycle. The unit will introduce students to the nature of modelling as an analytical and a communicative process. They will learn to create models that describe system specifications using the unified modelling language (UML). Further, students will learn to interpret and understand models created with traditional structured modelling techniques.

Major topics include: Systems analysis and design in context; Analysis and problem-solving; Fact-finding and data gathering; Systems analysis using UML; Systems design using UML.

Learning outcomes

At the completion of this unit students will have knowledge and understanding of:

1. The roles of systems analysts and system development designers;
2. Various system development methodologies;
3. The processes of systems analysis and design in structured and object-oriented systems development

methodologies and life-cycles;
4. Planning and problem definition in simple information technology problems;
5. The principles of systems design, and the relationship of systems design to systems analysis;
6. The criteria that can be used to evaluate the quality of a model of a system;
7. The purpose of different types of models in the UML;
8. The role and application of automated tools in systems modelling.

At the completion of this unit students will have developed attitudes that enable them to:

9. Appreciate that a range of valid solutions exist for any given problem.

At the completion of this unit students will have the skills to:

1. Model and design logical and physical systems using industry standard object oriented techniques;
2. Interpret and evaluate systems analysis and systems design models created using both structured and object oriented techniques;
3. Create analysis and design models using the main elements of the unified modelling language (UML);
4. Develop and practice the skills and competencies necessary to undertake a requirements analysis for a business application;
5. Apply problem solving techniques at different levels of abstraction and understand the effect this may have on a system specification.

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

1. Explain the interdependence and relationships between all stake-holders in the systems development process.

Contact hours

4 x contact hrs/week

Workload

For on campus students, workload commitments are:

- two-hour lecture and
- two-hour workshop (or studio) (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.

Off-campus students generally do not attend lecture and tutorial sessions, however, you should plan to spend equivalent time working through the relevant resources and participating in discussion groups each week.

You will need to allocate around 12 hours per week during the semester for this unit.

Unit relationships

Prerequisites

For course 2330, students' only pre-requisites are CSE1204 or FIT1020

Co-requisites

FIT1004 or FIT2010. For students in Courses 2233, 3323 and 2330 there are no co-requisites.

Prohibitions

BUS2021, BUS2071,CPE2003, CSE1204, CSE1205, GCO1813, GCO2601, GCO2852, GCO2826, IMS1001, IMS1002, IMS1805, IMS2071, IMS9001

Relationships

FIT2001 is a common core unit for all Faculty of IT undergraduate degrees. It is a prerequisite for many units in the second and third years of these degrees.

You may not study this unit and BUS2021, BUS2071, CSE1204, CSE1205, GCO1813, GCO2601, GCO2852, GCO2826, IMS1001, IMS1002, IMS1805, or IMS2701 in your degree.

Teaching and learning method

The teaching and learning in the unit is structured in the traditional manner around lectures and laboratory-based workshops. Most of the lecture and tutorial material is strongly supported by the prescribed text for the unit, it is very important that you get a copy of the text. Each week there is reading set from the text, you will find the unit isn't too difficult if you study consistently through the semester and keep up with the reading and exercises.

Your learning is also supported by additional web-based resources including a Moodle-based web site. You will find on the unit web site a forum - which will be actively monitored by staff - that you can used to ask questions or follow up on any issues you have. You will also find a set of lecture recordings (synchronised with the lecture slides) and some interviews with practising systems analysts in a podcast stream along with resources to make it easy for you to download and listen in.

Timetable information

For information on timetabling for on-campus classes please refer to MUTTS, http://mutts.monash.edu.au/MUTTS/

Tutorial allocation

On-campus students should register for tutorials/laboratories using the Allocate+ system:
http://allocate.cc.monash.edu.au/

Unit Schedule

Week	Topic	Study guide	References/Readings	Key dates
1	Introduction to systems analysis and design	Study guide 1: Introduction to systems analysis and design	Chapter 1 from unit text (SJB) - Satzinger, J. W., Jackson, R.B., and S.D. Burd (2008) Systems Analysis and Design in a Changing World, 5th Edition, Thomson Course Technology.	
2	The context of systems analysis and design	Study guide 2: The context of systems analysis and design	Chapter 2 and parts of chapter 3 SJB	
3	Requirements gathering	Study guide 3: Requirements gathering	Chapter 4 SJB	
4	Beginning analysis	Study guide 4: Beginning analysis	Chapter 5 SJB	
5	The traditional or structured approach to analysis	Study guide 5: The traditional or structured approach to analysis	Chapter 6 SJB	
6	Use case modelling	Study guide 6: Use case modelling	Chapter 7 SJB	Assignment 1a due
7	Finishing analysis	Study guide 7: Finishing analysis	Chapter 8 SJB	
8	The nature of good design	Study guide 8: The nature of good design	Chapter 9 SJB	

9	Structured design	Study guide 9: Structured design	Chapter 10 SJB	Assignment 1b due
10	Design - use case realisation	Study guide 10: Design - user case realisation	Chapter 12 SJB	
Mid semester break				
11	The user interface	Study guide 11: The user interface	Chapter 14 SJB	
12	System interfaces	Study guide 12: System interfaces	Chpater 15 SJB	Assignment 2 due
13	Unit review		Past exam papers available on unit web site.	

Unit Resources

Prescribed text(s) and readings

There is one prescribed text. Note that students are expected to purchase this text.

Satzinger, J. W., Jackson, R.B., Burd, S.D. and R. Johnson (2008) *Systems Analysis and Design in a Changing World*, 5th Edition, Thomson Course Technology.

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

Booch, G., Rumbaugh, J. and I. Jacobson (1999) *The Unified Modeling Language User Guide* Addison Wesley Professional.

Dennis, A., Wixom, B.H. and D. Tegarden (2008) *Systems Analysis and Design with UML Version 2.0: An Object-Oriented Approach*, 3rd Edition, Wiley.

Hoffer, J.A., George, J.F. and J.S. Valacich (2001) *Modern Systems Analysis and Design* 3rd Edition, Prentice Hall.

George, J.F., Batra, D., Valacich J.S. and J.A. Hoffer, (2004) *Object-Oriented System Analysis and Design* Prentice-Hall.

Lee, R. and W. Tepfenhart (2002) *Practical Object-Oriented Development with UML and Java*, Prentice Hall.

Maciaszek, L. (2004) *Requirements Analysis and System Design*, 2nd Edition, Addison-Wesley.

Page-Jones, M. (1988) *The Practical Guide to Structured Systems Des*ign 2nd Edition, Prentice-Hall.

Page-Jones, M. (2000) *Fundamentals of Object-Oriented Design in UML* Addison-Wesley.

Required software and/or hardware

Students will require access to an "industrial strength" CASE (computer aided software engineering) tool. In 2009, the tool choosen is Visual Paradigm for UML. This product can be downloaded from the Visual Paradigm web site but to run requires a license key. This is available for download from the FIT2001 Moodle-based unit web site or from your tutor.

Students will also require access to traditional personal productivity tools (word processing , graphics and presentation).

Software may be:

- downloaded from http://www.visual-paradigm.com/
- purchased at academic price at good software retailers
- in the case of some Microsoft software, borrowed from the FIT student loans counter on Level 6 of Building H.

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 6 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:

The major study resources for FIT2001 are:

- *Study guide.* A electronic study guide with 12 weekly study guides (along with 2 appendices). This is available for download from the unit web site.
- *Unit website.* An online unit website providing supplementary resources, assignment specifications and other general information. This page is accessed via the Moodle website located at http://moodle.med.monash.edu.au.
- Podcast. The unit podcast will include recordings of lectures and workshops along with interviews with industry-based practitioners. The podcast feed is located at http://podcast.infotech.monash.edu.au/fit2001/podcast.xml
- Facebook. Some resources and facilities for this unit are also being provided on the Facebook system. Students who are members of the "Monash" network will be able to join the FIT2001 discussion forum on Facebook. The unit's chief examiner, Peter O'Donnell who teaches at Caulfield, is also making the unit's lecture slides available for viewing using the Slideshare application via his profile page.
- Twitter. Informal notices about the unit and topical links will be posted on the micro-blogging site Twitter (www.twitter.com/fit2001).
- UserPlane. Lectures at Caulfield will - as an informal trial - be video-cast live via the UserPlane web site. The link to the FIT2001 "room" on UserPlane can be found on the Moodle-based unit web site.

Assessment

Overview

Practical work: 40%
Examination: 60%.

Faculty assessment policy

To pass a unit which includes an examination as part of the assessment a student must obtain:

- 40% or more in the unit's examination, and
- 40% or more in the unit's total 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 total assessment, and the total mark for the unit is greater than 44% then a mark of no greater than 44-N will be recorded for the unit.

The unit is assessed with two assignments (the first one is in two parts) and a three hour closed book examination. If you maintain a reflective blog a further bonus mark can be added to your assignment mark.

To pass a unit which includes an examination as part of the assessment a student must obtain:

- 40% or more in the unit's examination
  and
- 40% or more in the unit's **total non-examinaton** 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 total assessment, and the total mark for the unit is greater than 44% then a mark of 44-N will be recorded for the unit.

Assignment tasks

Assignment coversheets

Assignment coversheets are available via "Student Forms" on the Faculty website:
http://www.infotech.monash.edu.au/resources/student/forms/
You MUST submit a completed coversheet with all assignments, ensuring that the plagiarism declaration section is signed.

Assignment submission and return procedures, and assessment criteria will be specified with each assignment.

- **Assignment task 1**

  Title:
  Assignment 1a: Draft requirements specification with event table
  Description:

Assignment work in the unit is fully described, along with the assessment criteria, on the assignment page of the Moodle-based unit web site.

In this first assignment task you will create a draft of your requirements specification that will include a fully developed event table.

Weighting:

5%

Due date:

11.59pm, Friday of Week 6.

- **Assignment task 2**

Title:

Assignment 1b: Requirements specification

Description:

Assignment work in the unit is fully described, along with the assessment criteria, on the assignment page of the Moodle-based unitweb site.

In this second assignment task you will create a finalise of your requirements specification, this will include a contect diagram, an event table, a use case diagram and associated use case narratives and an domain class model.

Weighting:

20%

Due date:

11.59pm, Friday of Week 9.

- **Assignment task 3**

Title:

Assignment 2: Design specification

Description:

Assignment work in the unit is fully described, along with the assessment criteria, on the assignment page of the Moodle-based unit web site.

In this final assignment task you will create a design-specification that will include a partial design class model, a sequence diagram, a partial interface design and a database design model.

Weighting:

15%

Due date:

11.59pm, Friday of Week 12.

- **Assignment task 4**

Title:

Reflective blog posts

Description:

Each student is invited to keep a reflective journal on the blog site blog.infotech.monash.edu.au (a blog can also be maintained on the Moodle-based unit web site or using a commercial blogging system like www.blogger.com). This will be set up - with the help of teaching staff if required - during the week 1 tutorial. This blog will provide the opportunity to reflect on the learning that takes place throughout the unit. Each week you will be able to make a new posting to your blog. The blog entries should include a reflection on what has happened in terms of your progress on assignment and tutorial work, your management of the assignment project and its tasks, what lessons have been learned to date and what you (and the staff) could do differently.

A page listing all the reflective journals of FIT2001 students will be maintained on the Moodle-based unit web site.

Weighting:
Bonus of 3 marks added to overall assignment mark.

Due date:
Your last blog entry can be made anytime before the exam.

Examination

- **Weighting:** 60%
  Length: 3 hours
  Type (open/closed book): Closed book

See Appendix for End of semester special consideration / deferred exams process.

Due dates and extensions

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 not regarded as appropriate reasons for granting extensions. Students are advised to NOT assume that granting of an extension is a matter of course.

Students requesting an extension for any assessment during semester (eg. Assignments, tests or presentations) are required to submit a Special Consideration application form (in-semester exam/assessment task), along with original copies of supporting documentation, directly to their lecturer within two working days before the assessment submission deadline. Lecturers will provide specific outcomes directly to students via email within 2 working days. The lecturer reserves the right to refuse late applications.

A copy of the email or other written communication of an extension must be attached to the assignment submission.

Refer to the Faculty Special consideration webpage or further details and to access application forms:
http://www.infotech.monash.edu.au/resources/student/equity/special-consideration.html

Late assignment

If you believe that your assignment will be delayed because of circumstances beyond your control such as illness you should apply for an extension before the due date. Medical certificates or certification supporting your application may be required. Assignments submitted after the due date may incur a penalty for lateness. An assignment submitted more than seven days after the due date may be given a score of zero. If you anticipate being late then discuss the situation with your unit lecturer as early as possible; your unit lecturer will decide how many marks you will be penalised for each day your assignment is late, and whether or not any extension is warranted.

Assignments received after the due date will normally 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.

Appendix

Please visit the following URL: http://www.infotech.monash.edu.au/units/appendix.html for further information about:

- Continuous improvement
- Unit evaluations
- Communication, participation and feedback
- Library access
- Monash University Studies Online (MUSO)
- Plagiarism, cheating and collusion
- Register of counselling about plagiarism
- Non-discriminatory language
- Students with disability
- End of semester special consideration / deferred exams