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FIT9011 Systems analysis and design - Semester 1, 2009

Unit leader:

Madhu Chetty

Lecturer(s):

Gippsland

• Madhu Chetty

Introduction

Welcome to FIT9011 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 need 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 foundation unit that is studied by students for their masters degree.

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. 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. Similarily, 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 from the Gippsland campus of the Faculty of Information Technology teaches at and (via Gippsland) in off-campus mode.

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 a 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
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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:
- The roles of systems analysts and designers in systems development;
- Various system development methodologies;
- The processes of systems analysis and design in structured and object-oriented systems development methodologies and life-cycles;
- Planning and problem definition in simple information technology problems;
- The principles of systems design, and the relationship of systems design to systems analysis;
- The criteria that can be used to evaluate the quality of a model of a system;
- The purpose of different types of models in the UML;
- The role and application of automated tools in systems modelling.

and students will have developed attitudes that enable them to:
- Appreciate that a range of valid solutions exist for any given problem.

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

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

Workload

For on campus students, workload commitments are:
- two-hour lecture and
- two-hour workshop (or studio) (requiring advance preparation)
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• 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

It is assumed that students taking this unit are in the masters course on information technology. The unit FIT9012 Database management system is a required corequisite unit. It is expected that all students studying FIT9011 will have at least obtained a passing grade in FIT9012 or be studying it at the same time. In FIT9012 students will have gained and understanding of and an ability to perform logical database design. FIT9011 will further develop these areas.

Relationships

FIT9011 is a masters unit for the Faculty of IT.

You may not study this unit and FIT2001, BUS2021, BUS2071, CSE1204, CSE1205, GCO1813, GCO2601, GCO2852, GCO2826, IMS1001, IMS1002, IMS1805, or IMS2701 in your degree.

Continuous improvement

Monash is committed to ‘Excellence in education’ (Monash Directions 2025 - http://www.monash.edu.au/about/monash-directions(directions.html) 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. One of the key formal ways students have to provide feedback is through Unit Evaluation Surveys. The University’s Unit Evaluation policy (http://www.policy.monash.edu/policy-bank/academic/education/quality/unit-evaluation-policy.html) requires that every unit offered is 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.

Faculties have the option of administering the Unit Evaluation survey online through the my.monash portal or in class. Lecturers will inform students of the method being used for this unit towards the end of the semester.

Student Evaluations

If you wish to view how previous students rated this unit, please go to http://www.adm.monash.edu.au/cheq/evaluations/unit-evaluations/

Workload
Improvements to this unit

The unit is an equivalent to an undergraduate unit FIT2001 which has been offered 9 times in its current form so students should be confident that they are being taught a unit that is in very good shape. The content of the unit is stable and has not needed much change from previous offerings.

Unit staff - contact details

Unit leader

Dr Madhu Chetty
Senior Lecturer
Phone +61 3 990 27148

Lecturer(s):

Dr Madhu Chetty
Senior Lecturer
Phone +61 3 990 27148

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.

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

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Study guide</th>
<th>References/Readings</th>
<th>Key dates</th>
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<tr>
<td>1</td>
<td>Introduction to systems analysis and design</td>
<td>Study guide 1: Introduction to systems analysis and design</td>
<td>Chapter 1 from unit text (SJB) - Satzinger, J. W., Jackson, R.B., and S.D. Burd (2008) Systems Analysis and Design in a</td>
<td></td>
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<table>
<thead>
<tr>
<th></th>
<th>Chapter and parts of chapter</th>
<th>Study guide</th>
<th>Study guide topic</th>
<th>Assignment or due date</th>
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<tbody>
<tr>
<td>2</td>
<td>2 and parts of 3</td>
<td>2</td>
<td>The context of systems analysis and design</td>
<td>Chapter 2 and parts of chapter 3 SJB</td>
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<td>3</td>
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<td>3</td>
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<td>Beginning analysis</td>
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<td>5</td>
<td>6</td>
<td>5</td>
<td>The traditional or structured approach to analysis</td>
<td>Chapter 6 SJB</td>
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<td>7</td>
<td>6</td>
<td>Use case modelling</td>
<td>Chapter 7 SJB</td>
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<td>Assignment 1a due</td>
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<td></td>
<td>Mid semester break</td>
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<td>7</td>
<td>8</td>
<td>7</td>
<td>Finishing analysis</td>
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<td>The nature of good design</td>
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<td>11</td>
<td>10</td>
<td>Design - use case realisation</td>
<td>Chapter 12 SJB</td>
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<td>The user interface</td>
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<td>13</td>
<td>12</td>
<td>System interfaces</td>
<td>Chapter 15 SJB</td>
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<td>13</td>
<td></td>
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<td></td>
<td>Assignment 2 due</td>
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<tr>
<td></td>
<td>Unit review</td>
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<td>Past exam papers available on unit web site.</td>
</tr>
</tbody>
</table>

### Unit Resources

**Prescribed text(s) and readings**

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


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**

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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 FIT9011 (IT2001) Moodle-based unit web site.

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

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 FIT9011 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.
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.

The Educational Library and Media Resources (LMR) is also a very resourceful place to visit at http://www.education.monash.edu.au/library/

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

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
- 40% or more in the unit's total non-examination assessment
- 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 Task

  **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%

  **Criteria for assessment** :

  Marks are given for the quality of the event table. This will be assessed by looking at the coverage and level of the events included in the table. If you include other "parts" of the requirements specification - and we hope you do - these will be given feedback but not marked.

  Full details of the marking guide used to assess this item are available on the Moodle-web site.

  **Due date** : Thursday, 9 April 2009, Midnight.

* Assignment Task

  **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 unit web site.

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

  **Weighting** : 20%

  **Criteria for assessment** :

  Full details of the marking guide used to assess this item are available on the Moodle-web site.

  **Due date** : Sunday, 10 May 2009, Midnight.
Assignment Task

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%

Criteria for assessment:
Full details of the marking guide used to assess this item are available on the Moodle-web site.
Due date: Sunday, 31 May 2008, Midnight.

Examinations

• Examination 1

Weighting: 60%

Length: 3 hours

Type (open/closed book): Closed book

Assignment submission

All assignments will be submitted electronically via the Moodle-based unit web site.

Assignment coversheets

Electronic coversheets are to be submitted with your assignment. These can be obtained from the Assignments page of the unit web site (on Moodle).

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.

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 NOT assume that granting of an extension is a matter of course.

Requests for extensions must be made to the unit lecturer at your campus at least two days before the due date. You will be asked to forward original medical certificates in cases of illness, and may be asked to provide other forms of documentation where necessary. A copy of the email or other written communication of an extension must be attached to the assignment submission.

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.

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/](http://www.policy.monash.edu/policy-bank/academic/education/assessment/)

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

All assignment feedback will be provided on-line using the Moodle-based unit web site.

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 the University Plagiarism policy and procedure ([http://www.policy.monash.edu/policy-bank/academic/education/conduct/plagiarism-procedures.html](http://www.policy.monash.edu/policy-bank/academic/education/conduct/plagiarism-procedures.html)) which applies to students detected plagiarising.

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.