



Faculty of Science, Engineering and Built Environment

SIT725 Applied Software Engineering

Deakin University Unit Guide

Trimester 1, 2021

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WELCOME

Welcome to **SIT725 Applied Software Engineering**.

This unit forms a part of the Master of Information Technology degree and is for students who are involved in the software development stream. The primary focus of this unit is to extend your existing software engineering knowledge by introducing advanced software development approaches and techniques, industry standard and practices.

Since the topics of this unit are based on basic principles and methods of software engineering, it is highly recommended that you have the basic knowledge of Applied Software Engineering before taking this unit.

To begin with, we suggest you do the following before the unit commences:

- Please read this unit guide carefully as it explains the structure, content, assessments and rules associated with the unit
- Get your study materials ready
- Note the due dates of your assignments
- Make sure you can access DeakinSync and your Deakin e-mail account without problems
- Download and read the first set of class slides.

We wish you an enjoyable and challenging trimester.

Good luck!

This Unit Guide provides you with the key information about this Unit. For the best chance of success, you should read it very carefully and refer to it frequently throughout the trimester. Your Unit site (accessed in **DeakinSync**) also provides information about your **rights and responsibilities**. We will assume you have read this before the Unit commences, and we expect you to refer to it throughout the trimester.

Due to the coronavirus (COVID-19) situation, you may be learning in a way that is new to you. We appreciate your flexibility and dedication to learning. For a range of helpful services and resources, please go to study support <https://www.deakin.edu.au/students/studying/study-support>.

WHO IS THE UNIT TEAM?

Unit chair: leads the teaching team and is responsible for overall delivery of this unit

Alessio Bonti

Unit chair details

Campus: Melbourne Burwood Campus
221 Burwood Highway
BURWOOD VIC 3125

Email: a.bonti@deakin.edu.au

Phone: +61 3 924 68106

Other members of the team and how to contact them

Details of other staff members will be released on the unit site at the start of the trimester.

Administrative queries

- Contact your Unit Chair or Campus Leader
- Drop in or contact [Student Central](#) to speak with a Student Adviser

For additional support information, please see the Rights and Responsibilities section under 'Content' in your unit site.

ABOUT THIS UNIT

Software solutions are helping to shape industry innovations across the world. In this unit you will learn to apply software engineering principles, tools, and practices in the design and development of a range of innovative software solutions. This unit covers advanced approaches to applying software engineering to application development, planning, analysis and design models and testing.

Unit development in response to student feedback

Every trimester, we ask students to tell us, through eVALUate, what helped and hindered their learning in each Unit. You are strongly encouraged to provide constructive feedback for this Unit when eVALUate opens (you will be emailed a link).

In previous versions of this unit, students have told us that these aspects of the Unit have helped them to achieve the learning outcomes:

- Practical scenarios helped in comprehending concepts.
- Assignments and labs assisted learning in a more practical way.
- Lecture slides contained a good amount of information.
- Unit helped gain valuable insights into the concepts and laid the foundation stone of application.

They have also made suggestions for improvement, and so this is what we have done

- Students will be given more flexibility and support in forming groups for the group assignment.

If you have any concerns about the Unit during the trimester, please contact the unit teaching team - preferably early in the trimester - so we can discuss your concerns, and make adjustments, if appropriate.

Your course and Deakin's Graduate Learning Outcomes

| | |
|--|---|
| GLO1 Discipline-specific knowledge and capabilities: | appropriate to the level of study related to a discipline or profession |
| GLO2 Communication: | using oral, written and interpersonal communication to inform, motivate and effect change |
| GLO3 Digital literacy: | using technologies to find, use and disseminate information |
| GLO4 Critical thinking: | evaluating information using critical and analytical thinking and judgment |
| GLO5 Problem solving: | creating solutions to authentic (real world and ill-defined) problems |
| GLO6 Self-management: | working and learning independently, and taking responsibility for personal actions |
| GLO7 Teamwork: | working and learning with others from different disciplines and backgrounds |

GLO8 Global citizenship: engaging ethically and productively in the professional context and with diverse communities and cultures in a global context

Each Deakin course has **course learning outcomes** which explain what the Deakin Learning Outcomes mean in your discipline. Learning in each unit builds towards the course learning outcomes.

Your Unit Learning Outcomes

Each Unit in your course is a building block towards these Graduate Learning Outcomes - not all Units develop and assess every Graduate Learning Outcome (GLO).

| | These are the Learning Outcomes (ULO) for this Unit At the completion of this Unit successful students can: | Deakin Graduate Learning Outcomes |
|------|---|--|
| ULO1 | Apply software engineering principles and methods to modelling, design, implementation, testing and management of software applications | GLO1: Discipline-specific knowledge and capabilities GLO4: Critical thinking |
| ULO2 | Use software engineering tools and libraries in designing and implementing software solutions to real world problems, including command line tools, code editors, version control systems, modelling tools, packaging tools, and automated testing frameworks | GLO1: Discipline-specific knowledge and capabilities GLO3: Digital literacy GLO4: Critical thinking GLO5: Problem solving |
| ULO3 | Work effectively as a member of an IT project team around the development and documentation of a software product | GLO1: Discipline-specific knowledge and capabilities GLO4: Critical thinking GLO5: Problem solving GLO7: Teamwork |
| ULO4 | Identify knowledge gaps and effectively seek and use appropriate learning resources to acquire necessary knowledge | GLO6: Self-management |

These Unit Learning Outcomes are applicable for all teaching periods throughout the year

ASSESSING YOUR ACHIEVEMENT OF THE UNIT LEARNING OUTCOMES

Hurdle requirements

To be eligible to obtain a pass in this unit, students must meet certain milestones as part of the portfolio, and must achieve a mark of at least 50% in the examination.

Hurdle requirements

| Brief summary of the hurdle requirements | Rationale |
|--|---|
| <p>1. Unit Tasks (Learning Portfolio)</p> <p>Students are required to complete tasks by submitting them, collaborating with their tutor to resolve any issues identified, and discussing their understanding of the associated concepts by each task's indicated due date.</p> <p>Task discussions must be conducted in practical class (for campus student) or via OnTrack discussions (for Cloud students only). Please ensure that you are enrolled in the correct mode of study.</p> | <p>The pass tasks in this unit provide students the opportunity to develop and demonstrate achievement of the Unit Learning Outcomes at the minimum expected standards. These tasks are included as hurdle requirements so that students are able to provide evidence of achievement of these ULOs through their portfolio. The portfolio that they submit is used to measure their performance against the minimum standards as well as their ability to justify the outcomes that they have achieved through self-assessment and reflection. The hurdle requirement also provides a mechanism for student-staff interaction to check progress and address educational and motivational issues before it is too late in the trimester.</p> |
| <p>Tasks may be discussed with staff anytime within the submission period by the corresponding due dates. It is strongly recommended that Tasks are submitted well ahead of these due dates, as completion of the tasks involve submitting work for assessment, responding to feedback, discussing the task with teaching staff, and ensuring work submitted demonstrates the required outcomes. In many cases work will need to be corrected and resubmitted, potentially more than once, as part of this process.</p> <p>For a pass grade in this hurdle requirement the portfolio must include attempts on all Pass Tasks and demonstrate minimal acceptable standard for each learning outcome. For higher grades, all Pass Tasks must be complete, and additional Credit, Distinction, and High Distinction tasks are also required. Each of these tasks will have an indicated due date.</p> | |

Summative assessments

(tasks that will be graded or marked)

Deakin has a universal assessment submission time of 8 pm AEDT/AEST. A late penalty will apply to assessments submitted after 11.59 pm AEDT/AEST.

NOTE: It is your responsibility to keep a backup copy of every assignment where it is possible (eg written/digital reports, essays, videos, images). In the unusual event that one of your assignments is misplaced, you will need to submit the backup copy. Any work you submit may be checked by electronic or other means for the purposes of detecting collusion and/or plagiarism.

When you are required to submit an assignment through your unit site (accessed in DeakinSync), you should receive an email to your Deakin email address confirming that it has been submitted. You should check that you can see your assignment in the Submissions view of the Assignment folder after upload, and check for, and keep, the email receipt for the submission.

- Summative assessment task 1

| | Learning Portfolio |
|---|---|
| Brief description of assessment task | The learning portfolio will include work associated with tasks submitted, revised, and discussed with the teaching team during the trimester. |
| Detail of student output | <p>In completing the unit tasks students will produce a range of artefacts that will be combined into their portfolio. This will include:</p> <ul style="list-style-type: none"> • Program code • Documents of system design and functionalities • Group based project documentation and evidence of engagement <p>Each student will receive formative feedback on these tasks and will be encouraged to incorporate the feedback received to ensure the work is of the expected standard when it is finally assessed to determine the unit grade in the portfolio.</p> <p>Task discussion</p> <p>You will be required to discuss your understanding of concepts, and demonstrate achievement of unit learning outcomes, with the teaching team for the unit tasks to be marked as Complete. On-campus students are required to do this face-to-face during practical sessions, while cloud students will be required to discuss this over OnTrack discussions, Bb Collaborate or Skype for Business.</p> |
| Grading and weighting (% total mark for unit) | <p>100% - marked and graded</p> <p>Each task in the unit is associated with a grade: either Pass, Credit, Distinction, or High Distinction. Each grade will be awarded based on completion of the tasks associated with that grade, and the lower grades. There is no weight or percentage allocated to each tasks, instead the portfolio is assessed as a whole in order to determine the final grade.</p> <p>Project: every student must undertake a group project to be delivered by the end of the trimester. The project will showcase the student's ability to analyse problems, design solutions, and finally, implement them. In week 3, students will be allowed to choose the project difficulty, either Low or High, with the High difficulty only available to students whose target is D and HD. Students choosing Low difficulty will not be able to achieve D or HD grades.</p> <p>For this unit, the following will set the minimum stand for each grade :</p> <p>Pass - Complete all critical pass tasks, including discussing with teaching staff and achieve a minimum working project. A pass student should understand the high-level concepts and be able to independently apply them within the practicals and the project. The student should be able to analyse problems and design and implement a simple solution.</p> <p>Credit - Complete all pass tasks and achieve a working project which showcases modularity and implements at least some of the more advanced techniques learnt during the trimester. The code written is readable, and the student is able to keep the project in a good maintainable state. The student should be able to showcase their learnings and most importantly, be able to keep their project, code bases and documentation in a neat state. This may include things such as proper modularisation of code, commenting, code style etc.</p> |

| | |
|--|--|
| | <p>Distinction - Complete all Pass tasks and provide a working solution for the project. The code should reflect the credit level, plus, it should be highly efficient, and the design should showcase a scalable solution. The overall maintenance should be automated, and functionalities should be tested via a testing framework. The student is able to apply the fundamentals learnt and make the best technical or design decisions.</p> <p>High Distinction - Same as Distinction, but the team showcases higher than normal ownership and participation in the development. The code should be highly executable, and good reasoning behind every choice should be clear. The team also presents the project professionally, in a way to prove that preparation and effort were put into the making of it (pace, quality of the slides, no use of filling words etc.).</p> <p>All students achieving Distinction or higher in their project must also take and pass face to face examination (interview). During this interview, the student may be asked questions from any part of the lecture material, or go through a code challenge. Failing this examination will result in the overall grade being lowered to a lower score than the student's target grade.</p> |
| This task assesses your achievement of these Unit Learning Outcome(s) | <p>The portfolio must demonstrate that you have achieved all unit learning outcomes by proving evidence and self-reflection against each outcome.</p> <p>ULO1 – through the development and evaluation of software solutions to real world problems</p> <p>ULO2 – through the use of software engineering tools and practices</p> <p>ULO3- through engagement with, and contributions to, group project work</p> |
| This task assesses your achievement of these Graduate Learning Outcome(s) | <p>GLO1 – Through assessing development of programming and software design skills associated with data structures and algorithms</p> <p>GLO3 – through use of software engineering tools to create and deploy software solutions</p> <p>GLO4 – through analysis of solution alternatives and design trade-offs</p> <p>GLO5 – by developing solutions to real world problems</p> <p>GLO6 - through student ability to reflect on their learning to determine areas of growth and areas that still require development.</p> <p>GLO7 – through engagement and contributions to a group-based project</p> |
| How and when you will receive feedback on your work | <p>Students will be required to work on and submit tasks for formative feedback each week. The teaching team will then review progress and provide individual feedback to each student to assist them in completing the tasks and achieving their target grade for the unit.</p> <p>To ensure that there is sufficient time to staff to provide feedback, and to help manage the learning process, tasks will have set target dates and deadlines. The target date is the date that the task is considered to be due, however, as this may require additional fixes in order to incorporate feedback provided, the work can be resubmitted up to the deadline.</p> |
| When and how to submit your work | <p>At the end of the unit you will use the online task management tool to combine together the artefacts you have created and a learning summary report into a single portfolio for assessment by the end of Week 12 - Friday 4 June 2021, 8.00 pm AEST.</p> |

Your learning experiences in this Unit - and your expected commitment

To be successful in this unit, you must:

- Read all materials in preparation for your classes or seminars, and follow up each with further study and research on the topic;
- Start your assessment tasks well ahead of the due date;
- Read or listen to all feedback carefully, and use it in your future work;
- Attend and engage in all timetabled learning experiences as follows:

Scheduled learning activities - campus

1 x 1 hour class per week, 1 x 2 hour practical per week.

Scheduled learning activities - cloud

1 x 1 hour scheduled online workshop per week.

Note (on-campus learning activities)

Teaching will be delivered in line with the COVIDSafe health guidelines. All classes will be delivered online but other activities may include a combination of online and on-campus activities. Please refer to the details provided below, and check your unit site for announcements and updates.

Students will on average spend 150 hours over the trimester on learning and assessment activities in this unit. This includes online class time, designated online activities, discussion boards, assessment tasks, readings and study time.

The unit site will be the focal point for learning in this unit. All resources of this unit are available in the site, including class slides, Deakin Video recordings, seminar materials, assignments, and other related materials. The resources, except the assignments, are organised by weeks.

In addition, the administration of this unit, including announcements and assignment submission, is also conducted through the unit site. Therefore, students need to visit the site regularly to get the latest resources and information.

The discussion boards will be monitored frequently by academic staff involved in teaching this unit so that responses to student questions or feedback will be made within 2-3 working days, if not earlier.

Note

At Deakin,

- *Lectures* are referred to as *classes* (definition: a general meeting for all students, for which students do not need to register and where students are engaged through presentations and learning activities)
- *Tutorials, workshops and seminars* are referred to as seminars (definition: more interactive meetings for smaller groups of students).
- For the complete list of agreed definitions for learning experiences, see the [Course Design and Delivery Procedure](#).

UNIT LEARNING RESOURCES

Your unit learning resources are available in your unit site accessed in DeakinSync.

The texts and reading list for the unit can be found on the University Library via the link below: [SIT725](#) Note: Select the relevant trimester reading list. Please note that a future teaching period's reading list may not be available until a month prior to the start of that teaching period so you may wish to use the relevant trimester's prior year reading list as a guide only.

Essential learning resources

To facilitate and assist you in your learning, the following essential resources will be made available in the unit site (accessed

in DeakinSync):

- Class (lecture) slides (available progressively)
- Reading materials for each week (available progressively)
- Seminar materials for each week (available progressively)
- Assignment materials
- Resource bins for supplementary materials
- Other relevant materials and tools.

Recommended learning resources

The following references books are recommended:

(1) Ian Somerville: Software Engineering, Addison Wesley (Tenth edition, 2015),

Following textbooks will also be useful and will be followed in this unit. These will be cited in the lecture content as necessary.

(2) Roger S. Pressman : Software Engineering: A Practitioners Approach. (8th Edition, 2014)

(3) Kenneth S. Rubin : Essential Scrum: A Practical Guide to the Most Popular Agile Process, 1st edition, 2013,

(4) Roger S. Pressman and David Lowe (2011): Web Engineering: A Practitioners Approach. Publication date , 23 May 2011
McGraw-Hill Education - Europe, ISBN13 9780073523293

(5) Suzanne Robertson and James Robertson (2013), Mastering the requirements process, 3rd Edition, Pearson Education, Inc.

The above mentioned books cover main aspects, principles and methods of Web engineering. You should read the corresponding chapters of the textbook after each class to help you understand the class contents better. The book can also help you review your previous software engineering knowledge if you studied software engineering before, or learn some basic principles and methods of software engineering if you did not study software engineering before.

Textbooks, reference books, general books and software may be ordered from the bookshop:

- phone 1800 686 681 (freecall);
- email to DUSA-Bookshop@deakin.edu.au; or
- order online from the University bookshop web site at <http://www.dusabookshop.com.au/>

KEY DATES FOR THIS TRIMESTER

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|---|---------------------------------------|
| Trimester begins (classes begin) | Monday 8 March 2021 |
| Intra-trimester break (a short break during trimester) | Friday 2 April - Sunday 11 April 2021 |
| Trimester ends (classes cease) | Friday 28 May 2021 |
| Study period (examination preparation period) | Monday 31 May - Friday 4 June 2021 |
| Examinations begin | Monday 7 June 2021 |
| Examinations end | Friday 18 June 2021 |
| Inter-trimester break (the period between trimesters) | Monday 21 June - Friday 9 July 2021 |
| Unit results released | Thursday 8 July 2021 (6pm) |

UNIT WEEKLY ACTIVITIES

| Week | Commencing | Topic | Assessment activity |
|-------------------|--------------|--|----------------------------------|
| 1# | 8 March 2021 | Introduction to SIT725 and Web Engineering | |
| 2 | 15 March | Formulation and Planning | Finalise assignment topic |
| 3 | 22 March | Analysis Modeling of Web Applications (I) | |
| 4^ | 29 March | Analysis Modeling of Web Applications (II) | |
| 5 | 12 April | Web Application Design (I) | |
| 6 | 19 April | Web Application Design (II) | |
| 7* | 26 April | Web Application Design (III) | |
| 8 | 3 May | Construction and Deployment | |
| 9 | 10 May | Testing Web Applications (I) | |
| 10 | 17 May | Testing Web Applications (II) | |
| 11 | 24 May | Review | |
| 12 (Study period) | 31 May | | Learning Portfolio due |

#Victorian Labour Day public holiday: **Monday 8 March** - University open

^Easter vacation/intra-trimester break: **Friday 2 April - Sunday 11 April 2021** (between weeks 4 and 5)

*ANZAC Day observed, **Monday 26 April (in lieu of 25 April)** - University closed