# DSE19 Diploma of Software Engineering

## 1. About the Diploma of Software Engineering

The Diploma of Software Engineering qualification is embedded within a suite of courses offering fundamentals in software engineering knowledge and skills with two specialisations available: Game Programming and Artificial Intelligence. The structure of these courses consist of a common Software Engineering Core, Specialisation and Elective subjects. This Diploma is comprised of software engineering core and elective subjects from the three respective undergraduate software engineering specialisations.

Careers in Information Technology and Design have evolved significantly in the past decade to include new and emerging fields and specialisations that reflect the digital world that we now live in. This Diploma offers students an opportunity to explore the field of software engineering, development of fundamental skills for entry level industry, and pursue further higher education study in specialised software engineering disciplines.

This Diploma and the offered subjects give students the fundamental skills required for higher levels of education. All subjects are available in Online, Face-to-Face and blended mode, providing flexible options of study to serve the needs of students. Assessments are mapped to the learning outcomes and include examinations, projects, reports, tests and collaborations. Diploma subject matter and learning outcomes consist of skills in;

- Algorithms and data structure design and implementation.
- C++, C# and related programming languages.
- Discrete Mathematics for Software Engineering practice
- Software Engineering Project management skills

### Graduate employment opportunities

To be employed in the software engineering industry, a job candidate requires high-level proof of their skills. Entry-level software engineers must be able to effectively demonstrate practical problem-solving skills through articulated and applicable software engineering practice. The Diploma of Software Engineering provides sufficient time and resources for software engineering students to develop an introductory foundation of practical programming skills necessary for either further critical undergraduate study or for entry into junior level industry positions.

While predominantly this diploma enables students to engage with further study in software engineering specialisations, on successfully completing this qualification, students will have specific skills, knowledge and experiences to potentially gain employment in the wider software engineering industry in a variety of roles, such as:

- App Developer
- Quality Assurance Officer
- Production Assistant

- Junior Software Developer
- Junior/Associate Software Engineer

## Course Overview

| Course Title | Diploma of Software Engineering | | |
|---|---|---|---|
| **Study Options – Domestic Australian students** | Face to Face delivery<br><br>Online delivery<br><br>Full-time and part-time options available. | **Study Options – International students** | International students on a student visa must not enroll into any more than a third or 33% of online subjects over their course and must study at least one subject that is face to face in each trimester.<br><br>International students on a student visa are required to study full time, i.e. the student must complete a minimum of 1.0 EFTSL of study per year. |
| **Start Dates** | February, June, September<br><br>For specific dates visit the [website](#) | **Course Length** | Full-time: 1 year<br><br>Part-time: 2 years |
| **Payment Options - Domestic Australian students** | **Upfront payment**<br>This means tuition fees will be invoiced each semester and payment is required on or before the due date.<br><br>**FEE-HELP**<br>FEE-HELP is Australian Government's loan scheme for higher education degree courses. It can assist you in paying for all, or part of, your course fees. Repayments commence via the tax system once your income rises above a minimum threshold. Just like with any other debt, a FEE-HELP debt is a real debt that impacts your credit rating. | **Payment Options – International students** | **Upfront payment**<br>This means tuition fees will be invoiced each semester and payment is required on or before the due date. |
| **Course study requirements** | Each subject involves 10 hours of study per week, comprising 3 hours of facilitated study and 7 hours self-directed study. | **Assessment** | Project/Application/Research Proposal, Process/Research Documentation, Application Outcome, Reflective Journal/Blog, Report/Essay, Presentation/Pitch, Examinations/Tests/Quizzes, Research, Collaboration, Individual self-directed major project, Work integrated learning project work, Software development for social enterprise |

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*Course Information Set_Diploma of Software Engineering*                    Page **3** of **10**

| Locations | Sydney<br>Melbourne<br>Online | Delivered by | Torrens University Australia |
|---|---|---|---|
| Provider | Torrens University Australia Ltd is registered as a self-accrediting Australian university by the Tertiary Education Quality and Standards Agency (TEQSA). | CRICOS Course Code | 102264E |
| Provider obligations | Torrens University is responsible for all aspects of the student experience, including the quality of course delivery, in compliance with the *Higher Education Standards 2015* | Accrediting body | Torrens University Australia Ltd |
| Course Fees | For details, refer to the website. | Any other fees | For details, refer to the website. |

## 2. Essential requirements for admission

The general admission criteria that apply to Torrens University Australia courses can be located by visiting the Torrens University Australia website - https://www.torrens.edu.au/general-admission-information-for-torrens-university-australia-ltd.

## 3. Student Profile

The table below gives an indication of the likely peer cohort for new students in this course. It provides data on students who commenced in this course in the most relevant recent intake period, including those admitted through all offer rounds and international students studying in Australia.

| Applicant background | Trimester one / Full year intake [2020] | |
|---|---|---|
| | Number of students | Percentage of all students |
| **(A) Higher education study**<br>(includes a bridging or enabling course) | N/A | N/A |
| **(B) Vocational education and training (VET) study** | N/A | N/A |
| **(C) Work and life experience**<br>(Admitted on the basis of previous achievement not in the other three categories) | 6 | 86% |

| | | |
|---|---|---|
| **(D) Recent secondary education:**<br>• Admitted solely on the basis of ATAR<br>(regardless of whether this includes the consideration of adjustment factors such as equity or subject bonus points) | N/A | N/A |
| • Admitted where both ATAR and additional criteria were considered (e.g. portfolio, audition, extra test, early offer conditional on minimum ATAR) | N/A | N/A |
| • Admitted on the basis of other criteria only and ATAR was _**not**_ a factor<br>(e.g. special consideration, audition alone, schools recommendation scheme with no minimum ATAR requirement) | <5 | N/P |
| **International students** | N/A | N/A |
| ***All students*** | ***7*** | ***100%*** |

Notes: "<5" – the number of students is less than 5.
　　　　N/A – Students not accepted in this category.
　　　　N/P – Not published: the number is hidden to prevent calculation of numbers in cells with less than 5 students.

## 4. Admission Criteria

| Title of course of study | Diploma of Software Engineering |
|---|---|
| **Applicants with higher education study** | • A completed higher education qualification at AQF level 5 (diploma) or above, or equivalent, from an Australian University or another accredited higher education provider, OR<br>• successful completion of at least 1 EFTSL (equivalent full-time student load, or one full year) of an AQF level 6 (Associate Degree) or above, or equivalent, from an Australian University or another accredited higher education provider. |
| **Applicants with vocational education and training (VET) study** | • A completed vocational education qualification at AQF level 4 (Certificate IV) or above, or equivalent, from a registered training organisation (RTO), OR<br>• successful completion of at least 1 EFTSL (equivalent full-time student load, or one full year) of an AQF level 5 (Diploma) or above, or |

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*Course Information Set_Diploma of Software Engineering*　　　　　　　　　　　　　　Page **5** of **10**

| Title of course of study | Diploma of Software Engineering |
|---|---|
| | equivalent, at a registered training organisation (RTO). |
| **Applicants with work and life experience** | Demonstrated ability to undertake study at the required level:<br>• broadly relevant work experience (documented e.g. CV), demonstrating a reasonable prospect of success; OR<br>• formal, informal or non-formal study, completed or partially completed, demonstrating a reasonable prospect of success; OR<br>• written submission to demonstrate reasonable prospect of success; |
| **English Language Proficiency**<br>(applicable to international students, and in addition to academic or special entry requirements noted above) | IELTS (or equivalent) score of 5.5 minimum (Academic Module) or above, with no skills band less than 5.0 |
| **Applicants with recent secondary education (within the past two years) with ATAR or equivalent\***<br>(for applicants who will be selected wholly or partly on the basis of ATAR) | Completed year 12 or equivalent |

*ATAR profile for those offered places wholly or partly on the basis of ATAR in T1 2020:*

| (ATAR-based offers only, **across all offer rounds**) | **ATAR (OP in QLD)**<br>(Excluding adjustment factors) * |
|---|---|
| Highest rank to receive an offer | N/A |
| Median rank to receive an offer | N/A |
| Lowest rank to receive an offer | N/A |

*Notes: * "<5" – indicates less than 5 ATAR-based offers were made*

## Other admission options

*(For applicants who will be selected on a basis other than ATAR)*

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*Course Information Set_Diploma of Software Engineering*      Page **6** of **10**

| Special Entry | Applicants in any category whose study, work or life experiences have been impacted by disability, illness or family disruption will be given special consideration for admission. Each application will be considered on its merit, based on the evidence supplied by the applicant attesting to the circumstances of the applicant. Applicants for special entry may need to complete written or numerical tasks to assist with assessing eligibility for admission. |
|---|---|

## 5. How to apply

Via direct application to the institution

- https://apply.torrens.edu.au/

## 6. Advanced standing/academic credit/recognition of prior learning (RPL)

You may be entitled to credit for prior learning, whether formal or informal. Formal learning can include previous study in higher education, vocational education, or adult and community education. Informal learning can include on the job learning or various kinds of work and life experience. Credit can reduce the amount of study needed to complete a degree.

Applicants admitted based on prior higher education study may be eligible for Advanced Standing in the form of credit and/or recognition of prior learning (RPL) under the Torrens University Australia Credit Policy - (https://www.torrens.edu.au/policies-and-forms).

- Students with completed subjects may be eligible for specified credit and/or elective exemptions

- Students who have completed a qualification at AQF level 5 (diploma) or above may be eligible for block credit (where a block credit agreement exists)

- Students with a mix of formal study and informal and/or non-formal learning may be eligible for recognition of prior learning in addition to any credit approved.

Credit will not be applied automatically. Applicants must apply for credit and/or RPL as early as possible prior to each study period, with applications not accepted after week 2.

For further information about credit and recognition of prior learning please see http://www.torrens.edu.au/apply-online/course-credits.

## 7. Where to get further information

- Torrens University Australia (TUA) Website
  - https://www.torrens.edu.au/
- Universities Admissions Centre (UAC) Website
  - http://www.uac.edu.au/
- Quality Indicators for Learning and Teaching (QILT) Website
  - https://www.qilt.edu.au/

## 8. Additional Information

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*Course Information Set_Diploma of Software Engineering*                    Page **7** of **10**

## Course Structure

The course structure comprises 5 core subjects and 3 elective subjects at level 100. Students must complete a minimum of 80 credit points at level 100.

*Electives available to students may be chosen from the elective bank (please refer to the Course Structure on the Student HUB) or can be taken from any Torrens University course at the appropriate level with approval from the Program Director (or delegate).

## Course Rules

To be awarded the Diploma of Software Engineering, students must complete 80 credit points over 8 subjects. Each subject has a value of 10 credit points.

## Subjects

| SUBJECT DETAILS |
|---|
| SUBJECT TITLE, DESCRIPTOR |
| LEVEL 100 |
| **MAT101 Maths 1**<br><br>This subject introduces students to foundational mathematical concepts necessary for specialisation subjects in their degree. Main topics covered are – Linear Algebra, Discrete Maths and Geometry. The delivery consists of theoretical elements, a demonstration, and then the lecturers allow students to put these skills into practice. The students collaborate and share mathematical problem-solving approaches during frequent in-class discussions and are expected to provide these solutions for class reviews. |
| **ISE102 Introduction to Software Engineering**<br><br>This subject provides an introduction to the information and skills needed to begin working in software engineering. This subject will cover the concepts of object-oriented programming with a particular focus on learning to use the C++ programming language. An understanding of C++ will form the basis of the necessary skills needed for developing professional and complex software packages such as video games. |
| **ADS103 Algorithms and Data Structures (Pre-requisite ISE102)**<br><br>Students learn the fundamental data structures and algorithms that are needed to solve common software engineering problems. Lecturers show examples of data structures and algorithms, and use analogies to explain. Students improve their learning throughout this subject by working on a large number of projects. They solve common problems by designing, developing, implementing, testing, and enhancing a collection of data structures and algorithms. |
| **MSA106 Microservices Architecture (Pre-requisite ISE102)**<br><br>In this subject students learn the fundamentals and core concepts of Service Oriented Architecture and characteristics of microservices. They compare microservice architecture with monolithic style, emphasising why the former is better for continuous delivery. They also deal with operational complexities that are created while managing, monitoring, logging and updating microservices, and learn about the tools used to successfully manage, deploy and monitor applications based on microservice. |
| **CAO107 Computer Architecture and Operating Systems (Pre-requisite MAT101 & ISE102)**<br><br>This subject examines the design, organisation, and operation of modern computer systems from both a hardware and software perspective. The first half of this subject explores the five classic components of a computer system; input, output, memory, datapath, and control, with the last two making up the processor. We explore the history of computer systems, highlighting the recent change in trend from increasing clock speeds to increasing processor/core counts. We describe how the performance of a computer system can be |

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*Course Information Set_Diploma of Software Engineering*                                              Page **8** of **10**

evaluated, how it has been the driving factor behind progress and why this recent change in trend was necessary. Each of the five classic components are examined in both an abstract sense and by looking at specific real-world examples. We put particular emphasis on the structure, design and operation of modern CPUs, how CPUs differ in design and operation from GPUs, and how memory hierarchies are used to improve performance. The second half of this subject examines how operating systems bring all of these computer system components together in a cohesive way, to allow user programs to interact with these components without needing to know about the low-level details. Students will learn about the structure of a modern operating system, with particular emphasis on processes & threads, memory management, file systems and I/O.

## Locations

The Diploma of Software Engineering can be studied fully online or at the below Torrens University Campuses:

- Sydney: Level 1, 46-52 Mountain Street, Ultimo NSW Australia 2007
- Melbourne: 196 Flinders St, Melbourne, VIC  3000

## Campus Facilities and Services

All campuses are designed to provide students with professional spaces in which to learn and work. They have been planned with student study needs in mind with well-equipped accessible learning spaces as well as student breakout areas for group work and spending time with friends.

Facilities and Services include:

- The Customer Service Hub – our friendly and experienced staff can give help and advice about courses, your enrolment and campus life, including all services and activities on campus.
- Counsellors are available for students to consult with on a range of personal issues
- Student wireless access throughout the Campus
- Student break-out and relaxed study spaces for group work
- Student lounge areas – most with microwaves, kitchenette facilities and vending machines
- The Learning Hub, home to the Learning Support Team, encompasses Learning Skills Advisors, Learning Technology Advisors, and Library & Learning Skills Officers. It provides an integrated, holistic support program for students throughout the study lifecycle within a library/collaborative study environment. The service includes:
  - Support and workshops with highly qualified staff in the areas of Academic skills, Library skills, and Technology skills, both on campus and online.
  - Physical and digital resources relevant to studies, such as books, journals, multimedia, databases
  - Self-check kiosks for library loans and print and copy facilities

## A positive student experience

Torrens University Australia values the importance of a positive student experience, and therefore has robust processes to resolve student complaints.  The Student Complaints Policy, and associated procedures, can be accessed from the [website](https://www.torrens.edu.au/policies-and-forms) (https://www.torrens.edu.au/policies-and-forms).

## Paying for your qualification

We offer two payment options for this course:

- **Upfront payment**

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*Course Information Set_Diploma of Software Engineering*                                        Page **9** of **10**

If you want to complete your qualification debt-free you can choose to pay as you go. This means tuition fees will be invoiced each semester and payment is required on or before the due date using EFTPOS, credit card or direct transfer.

- **FEE-HELP**
FEE-HELP is Australian Government's loan scheme for higher education degree courses. It can assist you in paying for all, or part of, your course fees. Repayments commence via the tax system once your income rises above a minimum threshold. Just like with any other debt, a FEE-HELP debt is a real debt that impacts your credit rating.

Further information about FEE-HELP, including eligibility, is available at:
   - FEE-HELP website:
   http://studyassist.gov.au/sites/studyassist/helppayingmyfees/fee-help/pages/fee-help-
   - FEE-HELP booklets:
   http://studyassist.gov.au/sites/studyassist/helpfulresources/pages/publications


## Austudy and Abstudy
Students enrolled in this course may be eligible for government assistance, such as Austudy or Abstudy.

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*Course Information Set_Diploma of Software Engineering*                                    Page **10** of **10**