Computer Science

Year and Campus:	2016
Coordinator:	Dr Aaron Harwood
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Overview:	The program in Computer Science allows students to study a selection of topics in some depth and to work independently on a medium-sized project. It provides an introduction to research methodology and greater experience in system development. It may be used as a preparation for postgraduate studies in computer science, and opens additional career opportunities in systems design and implementation and in research support. **Entry Requirements:** To be eligible for the course, a student must have a three-year degree with substantial computing content as well as an average final-year mark at the level of at least the equivalent of 65. Industrial experience may also be taken into account. As a minimum, computing background should include solid experience with Unix and C programming, as well as good knowledge in the areas of data structures and algorithms for sorting, searching and graph manipulation, software development principles and tools, and software design, including object-oriented design. A student's computing background should also include good knowledge of several more specialised areas, such as artificial intelligence, computability and logic, operating systems, databases, human-computer interaction, computer networks, compilers, computer graphics, and software engineering. Finally, a student must have passed the equivalent of at least 25 points of level-1 Mathematics or Statistics. **Assessment:** Assessment consists of written assignments, oral presentations and written examinations. **Seminars:** The Department of Computing and Information Systems holds regular seminars; attendance at these is required for Graduate Diploma in Science (Advanced) students. Other talks may also be recommended by the teaching staff; these, too, are considered to be part of the course.
Learning Outcomes:	The Graduate Diploma in Science (Advanced) is designed to: # Allow students to study a selection of Computer Science topics in depth and to work on an investigative project; # Provide an introduction to research methodology; # Provide experience in system development; # Improve career opportunities in research-oriented jobs, or in systems design and implementation; # Encourage critical thought and novel ideas in computer science; # Improve abilities to evaluate information and analyse experimental data; # Improve oral and written communication skills. It can be taken full time over 2 semesters or part-time over 4 semesters.
Structure & Available Subjects:	The course consists of: # Coursework (75 pts); and # Research (25 pts). The coursework is shared with BCS (Hons) and BSc (Hons) in Computer Science.
Majors/Minors/ Specialisations	***Subject prerequisites:*** For stream specific requirements please **click here (http:// science.unimelb.edu.au/available-stream-requirements%20)** .
Subject Options:	**Coursework Component** Students (full-time or part-time) must pass 6 subjects from the following list (including up to three level-3 subjects).

Subject	Study Period Commencement:	Credit Points:
COMP90014 Algorithms for Functional Genomics	Semester 2	12.50
COMP90016 Computational Genomics	Semester 1	12.50
COMP90015 Distributed Systems	Semester 1, Semester 2	12.50
COMP90017 Sensor Networks and Applications	Not offered 2016	12.50
COMP90018 Mobile Computing Systems Programming	Semester 2	12.50
COMP90020 Distributed Algorithms	Semester 1	12.50
COMP90024 Cluster and Cloud Computing	Semester 1	12.50
COMP90042 Web Search and Text Analysis	Semester 1	12.50
COMP90044 Research Methods	Semester 2	12.50
COMP90043 Cryptography and Security	Semester 2	12.50
COMP90045 Programming Language Implementation	Not offered 2016	12.50
COMP90046 Constraint Programming	Not offered 2016	12.5
COMP90048 Declarative Programming	Semester 2	12.50
COMP90049 Knowledge Technologies	Semester 1, Semester 2	12.50
ISYS90050 IT Project and Change Management	June, Semester 1, Semester 2	12.50
SWEN90009 Software Requirements Analysis	Semester 1	12.50
SWEN90002 Engineering for Internet Applications	Not offered 2016	12.50
Subject	**Study Period Commencement:**	**Credit Points:**
COMP30017 Operating Systems and Network Services	Not offered 2016	12.50
COMP30018 Knowledge Technologies	Semester 1, Semester 2	12.50
COMP30019 Graphics and Interaction	Semester 2	12.50
COMP30020 Declarative Programming	Semester 2	12.50
COMP30021 Theoretical Computer Science	Not offered 2016	12.50

Students may also ask the Honours Coordinator's permission to take one relevant masters-level subject outside the Department.

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Research Component

As well as advancing the student's knowledge of computer science, the Graduate Diploma in Science (Advanced) is intended to introduce students to the world of research. Part way through their first semester, students will select a supervisor and project from a list of topics that academic staff have indicated they are willing to supervise. These projects involve a search of the relevant literature, some investigation or application by the student, and preparation of a final written report summarising the results of the investigation and its relation to other work in the area.

Students are required to present a written summary of their project proposals towards the end of their first semester, and to give a final oral presentation of their research shortly after the deadline for theses. The thesis should not exceed 12,000 words. The thesis contributes 25%

towards the final mark. The thesis will be examined by the supervisor and two other members of academic of staff. Guidelines for marking will be made available to students.

Subject	Study Period Commencement:	Credit Points:
COMP40002 Computer Science Research Project 25	Semester 1, Semester 2	25

Notes:	This program has a start-year and a mid-year intake.
Related Course(s):	Graduate Diploma in Science (Advanced)