



**MONASH** University  
Information Technology

**FIT2083**  
**Research methods in computer science**

**Unit Guide**

**Semester 1, 2015**

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# **FIT2083 Research methods in computer science - Semester 1, 2015**

This unit introduces students to the issues, concepts, methods and techniques associated with IT research in general and those most commonly used for research in computer science. It covers research methodologies, data collection and analysis, ethical and professional issues and oral and written communication skills.

Skills developed and knowledge acquired from this unit will prepare students to conduct and to communicate their own research, as well as to be knowledgeable consumers of others research.

## **Mode of Delivery**

Clayton (Day)

## **Workload Requirements**

Minimum total expected workload equals 12 hours per week comprising:

(a.) Contact hours for on-campus students:

- Two hours of lectures
- One 2-hour tutorial

(b.) Additional requirements (all students):

- A minimum of 8 hours independent study per week for completing lab and project work, private study and revision.

See also Unit timetable information

## **Additional workload requirements**

The two hours of lectures and two hours of tutorial will be delivered as two 2-hour workshops per week.

## **Unit Relationships**

### **Prohibitions**

FIT2084, FIT4005

### **Prerequisites**

Enrolment in course 4310

## **Chief Examiner**

**Professor David Green**

## **Campus Lecturer**

### **Clayton**

**David Green**

Consultation hours: By appointment

**Dr Noriaki Sato**

Consultation hours: TBA

**Associate Professor Graeme Johanson**

Consultation hours: TBA

## **Your feedback to Us**

Monash is committed to excellence in education and regularly seeks feedback from students, employers and staff. One of the key formal ways students have to provide feedback is through the Student Evaluation of Teaching and Units (SETU) survey. The University's student evaluation policy requires that every unit is evaluated each year. Students are strongly encouraged to complete the surveys. The feedback is anonymous and provides the Faculty with evidence of aspects that students are satisfied and areas for improvement.

For more information on Monash's educational strategy, see:

[www.monash.edu.au/about/monash-directions/](http://www.monash.edu.au/about/monash-directions/) and on student evaluations, see:  
[www.policy.monash.edu/policy-bank/academic/education/quality/student-evaluation-policy.html](http://www.policy.monash.edu/policy-bank/academic/education/quality/student-evaluation-policy.html)

## **Previous Student Evaluations of this Unit**

Feedback from past students reveal that the most rewarding aspects of the unit are learning about critical thinking and creative thinking, and gaining practical experience on real research projects.

If you wish to view how previous students rated this unit, please go to  
<https://emuapps.monash.edu.au/unitevaluations/index.jsp>

# Academic Overview

## Learning Outcomes

On successful completion of this unit, students should be able to:

- critically analyse and assess computer science research;
- recognise the main research methodologies used in information technology research and explain those used in computer science research;
- choose the appropriate research methodology;
- describe the most common data collection and analysis methods used in computer science research;
- explain the ethical and professional issues that may arise in research;
- communicate both orally and in writing;
- describe the professional environment and different kinds of roles in which information technology research is conducted.

## Unit Schedule

Week	Activities	Assessment
0		No formal assessment or activities are undertaken in week 0
1	Module 1 - THE NATURE OF RESEARCH - Major research paradigms and philosophies; Introductory examples and exercises	Exercises in class, Portfolio of practical work due Weekly (each workshop)
2	Module 2 - RESEARCH PROJECT DESIGN - The context of research; Structure of a project; Formulating research questions; Applying paradigms; Planning a path from question to result; Issues in research (ethics, IP, copyright etc)	Exercises in class
3	Module 3 - RESEARCH LITERATURE - How to conduct a literature search; How to prepare a literature review	Exercises in class
4	Module 4 - RESEARCH PROPOSALS - Structure and content of a research proposal	Exercises in class
5	Module 5 - COMMUNICATION OF RESEARCH - Research publishing; Types of outputs; Academic writing (including literature reviews); Oral communication	Exercises in class
6	Module 6 - NATURE OF EVIDENCE - Introduction to data collection and analysis; Use of online resources as data	Exercises in class
7	Module 7 - QUANTITATIVE DATA ANALYSIS 1 - Introduction to probability statistics	Exercises in class; Assignment on critical analysis of published material due Friday, 5pm
8	Module 8 - NATURE OF EVIDENCE - experimental design	Exercises in class
9	Module 9 - QUANTITATIVE DATA ANALYSIS 2 (Introduction to probability statistics 2)	Exercises in class
10	Module 10 QUANTITATIVE DATA ANALYSIS 3 (Correlation and regression)	Exercises in class
11	Module 11 - ALGORITHMS AND EVALUATION	Exercises in class
12	Module 12 - SIMULATION	Exercises in class, Portfolio of practical work completed by Friday 5pm, Mini-research project presentation in Week 12
	SWOT VAC	No formal assessment is undertaken in SWOT VAC. Mini-research project due Week 14, Friday 5pm
	Examination period	LINK to Assessment Policy: <a href="http://policy.monash.edu.au/policy-bank/academic/education/assessment/assessment-in-coursework-policy.html">http://policy.monash.edu.au/policy-bank/academic/education/assessment/assessment-in-coursework-policy.html</a>

\*Unit Schedule details will be maintained and communicated to you via your learning system.

## Teaching Approach

### Workshops

This teaching and learning approach provides facilitated learning, practical exploration and peer learning.

Each workshop will include lecture and lab based exercises.

The workshops will be co-taught with FIT4005.

## Assessment Summary

In-semester assessment: 100%

Assessment Task	Value	Due Date
Portfolio of practical work	40%	Weekly until week 12. Work from each module to be submitted by 5pm Friday of the week in which the module runs.
Critical analysis of published material	20%	Week 7, Friday 5pm
Mini-research project	40%	Presentation in Week 12, written report due Week 14, Friday 5pm

# Assessment Requirements

## Assessment Policy

Faculty Policy - Unit Assessment Hurdles

(<http://intranet.monash.edu.au/infotech/resources/staff/edgov/policies/assessment-examinations/assessment-hurdles>)

Academic Integrity - Please see resources and tutorials at

<http://www.monash.edu/library/skills/resources/tutorials/academic-integrity/>

## Assessment Tasks

### Participation

Full participation in the tutorials and labs is expected and will be formally assessed via Assessment task 1 in which students submit a portfolio of their practical work.

Working in groups is encouraged, both during practical classes, and in the project assignment. The aim is both to facilitate learning and to expose students to team research, which is a common feature of most modern research. When working in groups, each member is expected to participate fully and contribute to the work of the group. As part of the assessment, each student will be required to name and acknowledge their collaborators, to submit a statement about group management and contribution.

#### • Assessment task 1

**Title:**

Portfolio of practical work

**Description:**

This assignment consists of practical work submitted by students at the end of each workshop. Students will undertake detailed exercises based on the topic of each workshop.

**Weighting:**

40%

**Criteria for assessment:**

In most workshops, the assessment will consist of lab exercises and other activities undertaken during class. Some workshops will be individual exercises; others will involve group exercises, with a single submission for the team. Work will be assessed either during class or when written work is submitted at the end of the workshop. Most of the tasks in this assignment will be assessed on the student's ability to correctly perform the tasks, and interpret the findings.

**Due date:**

Weekly until week 12. Work from each module to be submitted by 5pm Friday of the week in which the module runs.

#### • Assessment task 2

**Title:**

Critical analysis of published material

**Description:**

In this assignment the students will provide a critical analysis of the research objectives and methods for information technology research, based on published material.



## Assessment Requirements

**Weighting:**

20%

**Criteria for assessment:**

The assignment will be assessed by:

- ◆ clarity and logic of the structure,
- ◆ level of critical analysis,
- ◆ referencing,
- ◆ standard of English expression, and
- ◆ evidence of independent thought and ideas.

**Due date:**

Week 7, Friday 5pm

**• Assessment task 3****Title:**

Mini-research project

**Description:**

This is a mini-project task, which can be performed by a small group of students. The outcome includes presentation in Week 12 about your mini-project and a research paper based on your mini-project.

**Weighting:**

40%

**Criteria for assessment:**

The assignment will be assessed by:

- ◆ clarity and logic of the structure,
- ◆ level of critical analysis,
- ◆ referencing,
- ◆ standard of English expression, and
- ◆ quality of evidence, interpretation and conclusions.

**Due date:**

Presentation in Week 12, written report due Week 14, Friday 5pm

## Learning resources

### Reading list

Zikmund, WG, Babin BJ, Carr JC, Griffin M. (2010). Business Research Methods (8th Edition) South-Western (Cengage Learning). ISBN-13: 978-0-324-32062-6

Creswell, John W. (2009). Research Design: Qualitative, Quantitative, and Mixed Methods Approaches (3rd Edition). ISBN: 9781412965576

Neuman, W. Lawrence Neuman (2006). Social Research Methods: Quantitative and Qualitative Approaches, Pearson.

Lists of additional readings will be provided for each lecture. See Moodle for further details.

Monash Library Unit Reading List (if applicable to the unit)  
<http://readinglists.lib.monash.edu/index.html>

## Feedback to you

Types of feedback you can expect to receive in this unit are:

- Informal feedback on progress in labs/tutes
- Graded assignments with comments
- Quiz results
- Solutions to tutes, labs and assignments
- Other: peer-assessment for tutorial contribution

## Extensions and penalties

Submission must be made by the due date otherwise penalties will be enforced.

You must negotiate any extensions formally with your campus unit leader via the in-semester special consideration process: <http://www.monash.edu.au/exams/special-consideration.html>

## Returning assignments

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

## Referencing requirements

All assignments should use APA style for referencing.

## Assignment submission

It is a University requirement

(<http://www.policy.monash.edu/policy-bank/academic/education/conduct/student-academic-integrity-managing-pla>

for students to submit an assignment coversheet for each assessment item. Faculty Assignment coversheets can be found at <http://www.infotech.monash.edu.au/resources/student/forms/>. Please check with your Lecturer on the submission method for your assignment coversheet (e.g. attach a file to the online assignment submission, hand-in a hard copy, or use an electronic submission). Please note that it is your responsibility to retain copies of your assessments.

## Online submission

If Electronic Submission has been approved for your unit, please submit your work via the learning system for this unit, which you can access via links in the my.monash portal.

## Prescribed text(s)

Limited copies of prescribed texts are available for you to borrow in the library.

Paul D. and Ormond, Jeanne E. (2013). *Practical Research - Planning and Design.* () Pearson (ISBN: ISBN: 13: 978-0-13-289950-5)).

## Other Information

### Policies

Monash has educational policies, procedures and guidelines, which are designed to ensure that staff and students are aware of the University's academic standards, and to provide advice on how they might uphold them. You can find Monash's Education Policies at:

[www.policy.monash.edu.au/policy-bank/academic/education/index.html](http://www.policy.monash.edu.au/policy-bank/academic/education/index.html)

### Faculty resources and policies

Important student resources including Faculty policies are located at

<http://intranet.monash.edu.au/infotech/resources/students/>

### Graduate Attributes Policy

<http://www.policy.monash.edu/policy-bank/academic/education/management/monash-graduate-attributes-policy.h>

### Student Charter

[www.opq.monash.edu.au/ep/student-charter/monash-university-student-charter.html](http://www.opq.monash.edu.au/ep/student-charter/monash-university-student-charter.html)

### Student services

The University provides many different kinds of support services for you. Contact your tutor if you need advice and see the range of services available at <http://www.monash.edu.au/students>. For Malaysia see <http://www.monash.edu.my/Student-services>, and for South Africa see <http://www.monash.ac.za/current/>.

### Monash University Library

The Monash University Library provides a range of services, resources and programs that enable you to save time and be more effective in your learning and research. Go to [www.lib.monash.edu.au](http://www.lib.monash.edu.au) or the library tab in [my.monash](#) portal for more information. At Malaysia, visit the Library and Learning Commons at <http://www.lib.monash.edu.my/>. At South Africa visit <http://www.lib.monash.ac.za/>.

### Disability Liaison Unit

Students who have a disability or medical condition are welcome to contact the Disability Liaison Unit to discuss academic support services. Disability Liaison Officers (DLOs) visit all Victorian campuses on a regular basis.

- Website: <http://www.monash.edu/equity-diversity/disability/index.html>
- Telephone: 03 9905 5704 to book an appointment with a DLO; or contact the Student Advisor, Student Community Services at 03 55146018 at Malaysia
- Email: [dlu@monash.edu](mailto:dlu@monash.edu)
- Drop In: Equity and Diversity Centre, Level 1, Building 55, Clayton Campus, or Student Community Services Department, Level 2, Building 2, Monash University, Malaysia Campus