FIT1031
Computers and networks

Unit Guide

Semester 1, 2015
# Table of Contents

**FIT1031 Computers and networks - Semester 1, 2015**

- **Mode of Delivery** .................................................................................................................. 1
- **Workload Requirements** ......................................................................................................... 1
  - Additional workload requirements .......................................................................................... 1
- **Unit Relationships** ................................................................................................................... 1
- **Prohibitions** .............................................................................................................................. 1
- **Chief Examiner** ........................................................................................................................ 1
- **Campus Lecturer** ...................................................................................................................... 2
  - Caulfield .................................................................................................................................... 2
  - South Africa .............................................................................................................................. 2
- **Tutors** ........................................................................................................................................ 2
  - Caulfield .................................................................................................................................... 2
- **Your feedback to Us** .................................................................................................................. 2
- **Previous Student Evaluations of this Unit** ............................................................................. 2

## Academic Overview

- **Learning Outcomes** .................................................................................................................. 3

## Unit Schedule

- **Teaching Approach** ................................................................................................................... 4
- **Assessment Summary** .............................................................................................................. 4

## Assessment Requirements

- **Assessment Policy** ..................................................................................................................... 6
- **Assessment Tasks** ....................................................................................................................... 6
  - Participation ............................................................................................................................... 6
- **Examinations** .............................................................................................................................. 7
  - Examination 1 ............................................................................................................................ 7
- **Learning resources** .................................................................................................................... 8
- **Reading list** ............................................................................................................................... 8
- **Feedback to you** ....................................................................................................................... 8
- **Extensions and penalties** .......................................................................................................... 8
- **Returning assignments** .............................................................................................................. 8
- **Assignment submission** ............................................................................................................ 8
  - Online submission ................................................................................................................... 8
  - Recommended text(s) ............................................................................................................... 9

## Other Information

- **Policies** .................................................................................................................................... 10
- **Faculty resources and policies** .................................................................................................. 10
  - Graduate Attributes Policy ..................................................................................................... 10
- **Student Charter** ....................................................................................................................... 10
- **Student services** ....................................................................................................................... 10
- **Monash University Library** ..................................................................................................... 10
- **Disability Liaison Unit** ............................................................................................................. 10
- **Other** ....................................................................................................................................... 11
- **Engineers Australia Stage 1 competencies** ............................................................................ 11
- **Relationship between Unit Learning Outcomes and BSE Course Outcomes** ......................... 12
- **Relationship between Unit Learning Outcomes and Assessments** ........................................ 12
FIT1031 Computers and networks - Semester 1, 2015

This unit introduces students to fundamentals of computer systems and networks. It provides basic knowledge of computer organisation and architecture, operating systems, and networking architecture, technology and operation.

Mode of Delivery

- Caulfield (Day)
- South Africa (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.) Study schedule for off-campus students:

- Off-campus students generally do not attend lecture and tutorial sessions, however should plan to spend equivalent time working through the relevant resources.

(c.) Additional requirements (all students):

- A minimum of 8 hours of personal study per week for completing tutorial questions, private study and revision.

See also Unit timetable information

Additional workload requirements

Students are expected to participate in group discussions during tutorial sessions.

Unit Relationships

Prohibitions

FIT1001

Chief Examiner

Dr Sid Ray
Campus Lecturer

Caulfield

Dr Sid Ray

Dr Malik Khan

South Africa

Dr Mohan Das

Tutors

Caulfield

Mr Manoj Kathpalia, Admin Tutor

Mr Safi Uddin

Ms Vidya Saikrishna

Prof. Gopal Gupta

Dr Sid Ray

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/ and on student evaluations, see:
www.policy.monash.edu/policy-bank/academic/education/quality/student-evaluation-policy.html

Previous Student Evaluations of this Unit

Based on previous student feedback this unit is considered to be appropriately structured and no changes have been made for this semester.

If you wish to view how previous students rated this unit, please go to
Academic Overview

Learning Outcomes

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

1. explain the internals of a basic computer structure and its operations;
2. describe the internal operation of the CPU and explain how it is used to execute instructions;
3. identify factors that affect computer performance;
4. explain the basics of operating systems, system software and networking concepts and apply them in simple programs;
5. describe communication and networking models such as TCP/IP and OSI and develop simple solutions to network problems.
## Unit Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Activities</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Orientation Week: Follow the Orientation Week program</td>
<td>No formal assessment or activities are undertaken in week 0</td>
</tr>
<tr>
<td>1</td>
<td>Introduction and Basic Concepts of Computing Systems</td>
<td>No Tutorial in Week 1</td>
</tr>
<tr>
<td>2</td>
<td>Data Representation and Arithmetic</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Data Representation and Arithmetic</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Boolean algebra and Digital Logic</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Computer Architecture (including Instruction Set Architecture)</td>
<td>Test 1</td>
</tr>
<tr>
<td>6</td>
<td>Memory Components - Organization, Primary Memory, Cache Memory, Virtual Memory</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Operating Systems (OS) - Introduction to OS, Types and Activities of OS</td>
<td>Test 2</td>
</tr>
<tr>
<td>8</td>
<td>Networking Concepts</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Models of Communications &amp; Networking</td>
<td>Test 3</td>
</tr>
<tr>
<td>10</td>
<td>Transport Layer and TCP</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Addressing Mechanism &amp; Routing Strategies and LAN</td>
<td>Test 4</td>
</tr>
<tr>
<td>12</td>
<td>Revision and Discussion on Exam Preparation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SWOT VAC</td>
<td>No formal assessment is undertaken in SWOT VAC</td>
</tr>
<tr>
<td></td>
<td>Examination period</td>
<td>LINK to Assessment Policy:</td>
</tr>
</tbody>
</table>

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

## Teaching Approach

### Lecture and tutorials or problem classes

This teaching and learning approach helps students to initially encounter information at lectures, discuss and explore the information during tutorials, and practice in a hands-on lab environment.

Students are expected to participate in group discussions during tutorial sessions.

## Assessment Summary

Examination (3 hours): 60%; In-semester assessment: 40%

<table>
<thead>
<tr>
<th>Assessment Task</th>
<th>Value</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test 1: Basic Concepts of Computing Systems</td>
<td>10%</td>
<td>Week 5</td>
</tr>
<tr>
<td>Test 2: Boolean Algebra, Digital Logic and Computer Architecture</td>
<td>10%</td>
<td>Week 7</td>
</tr>
<tr>
<td>Unit Schedule</td>
<td>Percentage</td>
<td>Week</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td>------------</td>
<td>------------</td>
</tr>
<tr>
<td>Test 3: Memory Organization and Operating Systems</td>
<td>10%</td>
<td>Week 9</td>
</tr>
<tr>
<td>Test 4: Computer Networks - Concepts, Addressing Mechanisms &amp; Routing Strategies and LAN</td>
<td>10%</td>
<td>Week 11</td>
</tr>
<tr>
<td>Examination 1</td>
<td>60%</td>
<td>To be advised</td>
</tr>
</tbody>
</table>
Assessment Requirements

Assessment Policy

Faculty Policy - Unit Assessment Hurdles

Academic Integrity - Please see resources and tutorials at
http://www.monash.edu/library/skills/resources/tutorials/academic-integrity/

Assessment Tasks

Participation

• Assessment task 1

  Title:  
  Test 1: Basic Concepts of Computing Systems

  Description:  
  Assessment on the topics of:

  ♦ Introduction to computing Systems and
  ♦ Data representation and Computer Arithmetic

  Weighting:  
  10%

  Criteria for assessment:  
  Your problem-solving ability will be tested on the topics listed.

  Due date:  
  Week 5

• Assessment task 2

  Title:  
  Test 2: Boolean Algebra, Digital Logic and Computer Architecture

  Description:  
  Assessment on the topics of:

  ♦ Boolean Algebra,
  ♦ Digital Logic, and
  ♦ Computer Architecture including Instruction Set Architecture

  Weighting:  
  10%

  Criteria for assessment:  
  Your problem-solving ability will be tested on the topics listed.

  Due date:  
  Week 7
Assessment Requirements

• Assessment task 3

Title:  
Test 3: Memory Organization and Operating Systems

Description:  
Assessment on the topics of:

♦ Memory Organization,
♦ Primary Memory, Cache Memory and Virtual Memory,
♦ Operating Systems - Introduction, Types and Activities

Weighting:
10%

Criteria for assessment:  
Your problem-solving ability will be tested on the topics listed.

Due date:  
Week 9

• Assessment task 4

Title:  

Description:  
Assessment on the topics of:

♦ Networking Concepts,
♦ Models of Communications and Networking,
♦ Addressing Mechanisms & Routing Strategies, and
♦ Local Area Networks

Weighting:
10%

Criteria for assessment:  
Your problem-solving ability will be tested on the topics listed.

Due date:  
Week 11

Examinations

• Examination 1

Weighting:  
60%

Length:  
3 hours

Type (open/closed book):  
Closed book

Hurdle requirements:

♦ In-semester assessment: 40%
♦ Exam: 40%

Electronic devices allowed in the exam:
Learning resources

Reading list

- Electronic resources including book chapters, questions and their solutions, and links to other relevant resources will be made available on the unit Moodle site.
- A list of recommended text books is included under the item "Recommended text(s)".

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
- Test results and feedback
- Solutions to tutes, labs and assignments

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.

Assignment submission

It is a University requirement 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.
Assessment Requirements

Recommended text(s)


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:

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.html

Student Charter


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 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
- 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
Other

Engineers Australia Stage 1 competencies

This unit is a core unit in the Bachelor of Software Engineering accredited by Engineers Australia. Engineers Australia Accreditation Policy of Professional Engineering Programs requires that programs demonstrate how engineering graduates are prepared for entry to the profession and achieve Stage 1 competencies. The following information describes how this unit contributes to the development of these competencies for the Bachelor of Software Engineering. (Note: not all competencies may be emphasised in this unit).

Stage 1 competency

1. Knowledge and Skills base

1.1. Comprehension, theory based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the engineering discipline.

This unit covers basics of computers and network communication, which fall under fundamental knowledge (computing foundations) for the software engineering discipline, as stated in SWEBOK. This element of competency is covered by lectures, practical exercises, tests and exams.

1.2. Conceptual understanding of the mathematics, numerical analysis, statistics, and computer and information sciences, which underpin the engineering discipline.

The unit covers computing foundation knowledge, which underpins software engineering.

1.3. In-depth understanding of specialist bodies of knowledge within the engineering discipline.

Not covered in this unit.

1.4. Discernment of knowledge development and research directions within the engineering discipline.

Not covered in this unit.

1.5. Knowledge of engineering design practice and contextual factors impacting the engineering discipline.

Not covered in this unit.

1.6. Understanding of the scope, principles, norms, accountabilities and bounds of sustainable engineering practice in the specific discipline.

Not covered in this unit.

2. Engineering application ability

2.1. Application of established engineering methods to complex engineering problem solving.

The unit addresses computer and network issues and problems and how to solve these problems. It is covered by exercises and assessments.

2.2. Fluent application of engineering techniques, tools and resources.

Some techniques are applied to solve computer and network problems.

2.3. Application of systematic engineering synthesis and design processes.

Not covered in this unit.

2.4. Application of systematic approaches to the conduct and management of engineering projects.

Not covered in this unit.

3. Professional and personal attributes

3.1. Ethical conduct and professional accountability.

Some aspects are covered in this unit, in relation to good programming practice and ethics.
3.2. **Effective** oral and written communication in professional and lay domains.

3.3. **Creative**, innovative and proactive demeanour.

3.4. **Professional** use and management of information.

3.5. **Orderly** management of self, and professional conduct.

3.6. **Effective** team membership and team leadership.

Students are expected to communicate their solutions effectively to the lecturer and tutors.

Using problem solving techniques to develop solutions is inherently a creative endeavour.

Not covered in this unit.

Students manage and conduct themselves orderly during unit assessments.

Not covered in this unit.

### Relationship between Unit Learning Outcomes and BSE Course Outcomes

<table>
<thead>
<tr>
<th>No.</th>
<th>CO 1</th>
<th>CO 2</th>
<th>CO 3</th>
<th>CO 4</th>
<th>CO 5</th>
<th>CO 6</th>
<th>CO 7</th>
<th>C0 8</th>
<th>CO 9</th>
<th>CO 10</th>
<th>CO 11</th>
<th>CO 12</th>
<th>CO 13</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Relationship between Unit Learning Outcomes and Assessments

<table>
<thead>
<tr>
<th>No.</th>
<th>Assignments</th>
<th>Tests</th>
<th>Practical Exercises</th>
<th>Exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>2</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>3</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>4</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>5</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>