

# **Distributed Systems Technology – 7159**

## **Unit Outline 2009**

**Faculty of Information Sciences and Engineering**

**University of Canberra**

*Australian Government Higher Education (CRICOS)  
Registered Provider number: #00212K*

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This Unit Outline must be read in conjunction with:

- a) *Studying at the University of Canberra: A Guide to Policies and Procedures*, which sets out University-wide policies and procedures, including information on matters such as plagiarism, grade descriptors, moderation, feedback and deferred exams, and is available at <http://www.canberra.edu.au/student-services>
- b) *Guide to Student Services at the University of Canberra*, and is available at <http://www.canberra.edu.au/student-services>
- c) Any additional information specified in section 6f.

#### **1: General Information**

- 1a Unit title:** Distributed Systems Technology (DST)
- 1b Unit number:** 7159
- 1c Semester and year offered:** 2/2009
- 1d Credit point value:** 3
- 1e Unit level:** 3
- 1f Name of Unit Convener and contact details (including telephone and email)**  
Kim Le, Tel. 6201-2425, Email [kim.le@canberra.edu.au](mailto:kim.le@canberra.edu.au)
- 1g Administrative contact details (including name, location, telephone and email)**  
Faculty of ISE Office, 11B14, Tel 6201-2153 or 6201-2417, Email: [ise@canberra.edu.au](mailto:ise@canberra.edu.au)

## 2: Academic Content

### 2a Unit description and learning outcomes

#### **Syllabus**

This unit builds on the unit System Software. It starts with an introduction to different communication technologies and structures of computer networks, including LAN, WAN and the Internet. Description of layers of software added to an operating system to support networking, including the TCP/IP protocol suite, is discussed in detail. Techniques for client-server programming in different platforms are also examined. Popular distributed technologies are investigated.

#### **Learning Outcomes**

On successful completion of this unit students will be able to describe and compare current types of network hardware; describe in detail the purpose and operations of the protocols making up the OSI and Internet protocol suites; write software taking advantage of selected protocol stacks; and describe and implement simple examples of the techniques used in client-server computing.

### 2b Prerequisites: Software Technology 2 and System Software.

## 3: Delivery of Unit and Timetable

### 3a Delivery mode

Delivery mode: The subject is delivered with face-to-face contact including lectures, lab/tutorials and consultation. In addition, some discussions and questions/answers may be presented in the subject website.

Lectures: Up to four hours of lectures/week

Lab/tutorials: One hour /week

Consultation: One hour/week consultation with pre-arranged appointments (email).

### 3b Schedule of topics/lectures/tutorials/practicals/field classes by week

Week	Activity
1	Distributed Systems: An Overview
2	Computer Network Technologies and Architectures
3	Application Network Interface-Client-Server Software Design
4	Client-Server Programming with VB in .NET Environment
5	Client-Server Programming with VB in .NET Environment (Continued)
6	Client-Server Programming with C in UNIX Environment
7	Client-Server Programming with C in UNIX Environment (Continued)
8	Class free period
9	Class free period
10	UDP Protocol & Multicasting
11	TCP/IP Protocols
12	TCP/IP Protocols (Continued)

13	TCP/IP Protocols (Continued)
14	Internet Services
15	Revision

#### 4: Unit Resources

##### 4a Lists of required texts/readings

Textbook: Forouzan, TCP/IP Protocol Suite, McGraw Hill.

References:

- Ekedahl, Programming with Microsoft Visual Basic 2005: An Object-Oriented Approach, 2<sup>nd</sup> Edition, 2007, Thomson.
- Stevens et al., UNIX Network Programming –The Sockets Networking API, Volume 1, Addison Wesley.

##### 4b Materials and equipment

Computing facilities: PC and UNIX hosts will be used in the unit. Students need to officially enroll in the unit by the end of Week 1 to make sure that their computing facilities, including lab access, have been set up appropriately.

##### 4c Unit website

Students are required to visit the unit website on UC Moodle LearnOnline:

<https://learnonline.canberra.edu.au/course/view.php?id=2879>

at least twice/week to get updated information about the unit such as lecture notes, software examples, lab/tute activities/questions, etc.

#### 5: Assessment

##### 5a Assessment overview

Assessment Item	Deadline	Weights
Assignment 1: Client/server programming with VB in .NET 2008 environment	Monday, Week 7	20%
Assignment 2: Network programming with C in UNIX environment	Monday, Week 14	20%
Final Exam:	Exam period	60%

##### 5b Details of each assessment item

- Assignment 1: Client/server programming with VB in .NET 2008 environment. The purpose of this assignment is to give students a chance to gain some experience at designing and implementing a simple client-server application. The expected time is 20 hours for an average student.
- Assignment 2: Network programming with C in UNIX environment. The purpose of this assignment is to give students an opportunity to familiarise themselves with socket facilities through the design and implementation of a simple network communication package with unicast and multicast capabilities using the C language in UNIX environment. The expected time is 20 hours for an average student.
- Final Exam: The exam paper will cover most materials delivered in the unit and assignments. The exam time is of 2 hours including reading time. The materials permitted to bring into an exam room are an A4 sheet of notes (printed or hand written) on both sides, and a non-programmable calculator. Students who have registered with the University Disability Office will be specially considered for their exam needs.

## 5c Special assessment requirements

### Final result

To be sure of passing the subject, students must have:

- a) at least 40% of the maximum marks for the final exam; and
- b) 50% or higher for the total of weighted marks.

Each assignment is assessed on the basis of a written report, and a demonstration / oral presentation session.

Final grades are based on the total T of weighted marks: P ( $50\% \leq T < 65\%$ ), CR ( $65\% \leq T < 75\%$ ), DI ( $75\% \leq T < 85\%$ ), HD ( $\geq 85\%$ ).

### Assignment submission

- Documentation: Documentation accompanying assignment submissions must be neat and on clean A4 size papers. Requirements for each assignment will be specified in the assignment handout that is made available the first time during lecture time and then at the ISE front desk or on the unit website. The front page of each assignment submission must include students' names and ID numbers, the unit name, the assignment number, and the tutor's name. The front page must also have a declaration specifying that all the works, including documentation, obtained data, software, etc., in the assignment are students' own and sources of references are cited appropriately. A sample cover page for assignment documentation can be download from the unit website.
- Late submission: If students have a good reason for a late submission, e.g. sickness, family problem, etc. the students, or somebody on their behalves, must inform their tutor by email before the deadline to avoid an automatic mark of 0%. A late submission without an automatic 0% mark must be submitted within two weeks after the assignment deadline, except in special cases considered as reasonable by the lecturer. An assignment submitted late will not have marks higher than 50% of the maximum marks for that assignment, except in special cases considered as reasonable by the lecturer.
- Resubmission: An assignment submitted in time may be resubmitted, within a period of maximum two weeks after the assignment deadline, if the students wishes to improve their marks. Resubmitted assignments will not have marks higher than 50%. Resubmission is not allowed to any assignment submitted late.

### Assignment demonstration:

Students need to demonstrate their assignments during a lab session or other times as specified in assignment handouts.

## 5d Supplementary assessment

See Supplement Assessment Policy at

[https://guard.canberra.edu.au/policy/policy.php?pol\\_id=2900](https://guard.canberra.edu.au/policy/policy.php?pol_id=2900) (section 7).

## 5e Text-matching software

Nil

# 6: Student Responsibility

## 6a Workload

The amount of time you will need to spend on study in this Unit will depend on a number of factors including your prior knowledge, learning skill level and learning style. Nevertheless, in planning your time commitments you should note that for a 3cp Unit the total notional

workload over the fifteen week semester is assumed to be 150 hours or an average of 10 hours per week. These hours include time spent in classes. The total workload for Units of different credit point value should vary proportionally. For example, for a 6cp Unit the total notional workload over a fifteen week semester is assumed to be 300 hours or an average of 20 hours per week.

**6b Special needs**

Students who need assistance in undertaking the unit because of disability or other circumstances should inform their Unit Convener or the Disabilities Office as soon as possible so the necessary arrangements can be made.

**6c Attendance requirements**

Students need to demonstrate their assignments during normal lab/tutorial sessions of the due weeks of the assignments.

**6d Required IT skills**

See Section 2b

**6e Costs**

HECS: Students need to read information from DETYA guidelines or similar materials about HECS.

Assignments submission: All assignments submission must be in A4 papers, program codes must be originally printed with attached diskettes.

**6f Additional information**

Additional information will be informed during lecture times and on the unit website.

<b>7: Student Feedback</b>
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All students enrolled in this Unit will have an opportunity to provide anonymous feedback on the Unit at the end of the Semester via the Unit Satisfaction Survey which will be presented to you on OSIS. Your lecturer or tutor may also invite you to provide more detailed feedback on their teaching through an anonymous in-class questionnaire administered through the University's Teaching and Learning Centre (TLC).

<b>8: Authority of this Unit Outline</b>
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Any change to the information contained in Section 2 (Academic content), Section 3 (Delivery of Unit and timetable) and Section 5 (Assessment) of this document, will only be made by the Unit Convener if the written agreement of staff and a majority of students has been obtained; and if written advice of the change is then forwarded to each student enrolled in the Unit at their registered term address. Any individual student who believes him/herself to be disadvantaged by a change is encouraged to discuss the matter with the Unit Convener.