

## Security and Support in IT

Unit code and version	11488.1
Unit offering option	207230
Study level	Level 1 - Undergraduate Introductory Unit
Credit points	3
Faculty	Faculty of Science and Technology
Discipline	Academic Program Area - Technology
Unit offering details	Semester 2, 2022 , ON-CAMPUS , UC - Canberra, Bruce
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## Academic content

### Unit description

This unit teaches the principles and practice of IT system support and security management. Topics include desktop computer support, server computer support, help desk operation, cryptography and its application, software security, network security, operating system security, trusted computing and multilevel security, privacy issues, and professionalism and professional ethics. The unit provides students with a sound knowledge of IT infrastructure and security. It also provides students with the skills of daily operation, i.e. the support and management of these systems. In addition, the unit promotes and strengthens important generic skills, such as communication, analysis and inquiry, problem solving, independent and group working, and professionalism and social responsibility. This unit will be co-taught with Security and Support in IT G, 6689.

### Learning outcomes

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

1. Describe the basic concepts of various encryption algorithms and

- choose appropriate encryption algorithms for applications;
- 1. Explain security threats, such as malicious software and DOS etc. and apply appropriate counter measures, such as firewall, multiple security models, and authentication and authorisation etc;
- 2. Undertake the basic tasks in managing IT infrastructure in a hypothetical or real case scenario, including desktop and server and computers, network, help desk operation, and security; and
- 3. Further strengthen important generic skills, such as communication, analysis and inquiry, problem solving, independent and group working, and professionalism and social responsibility.

## Graduate attributes

1. UC graduates are professional
  - communicate effectively
  - display initiative and drive, and use their organisation skills to plan and manage their workload
  - employ up-to-date and relevant knowledge and skills
  - take pride in their professional and personal integrity
  - use creativity, critical thinking, analysis and research skills to solve theoretical and real-world problems
2. UC graduates are global citizens
  - adopt an informed and balanced approach across professional and international boundaries
  - behave ethically and sustainably in their professional and personal lives
  - make creative use of technology in their learning and professional lives
3. UC graduates are lifelong learners
  - adapt to complexity, ambiguity and change by being flexible and keen to engage with new ideas
  - evaluate and adopt new technology
  - reflect on their own practice, updating and adapting their knowledge and skills for continual professional and academic development

## Skills development

As students of the University of Canberra, you will develop your critical thinking skills, your ability to solve complex problems, your ability to work with others, your confidence to learn independently, your written communication skills, your spoken communication skills and a number of work-related knowledge and skills.

## Prerequisites

None.

## Corequisites

None.

## Accreditation

This unit is a part of courses accredited by the [Australian Computer Society \(ACS\)](#). It meets the following skill categories:

### [Skills framework for the Information Age \(SFIA\) v8](#)

This unit aligns the following SFIA professional skills:

- Vulnerability assessment VUAS
- Security administration SCAD
- Applications support ASUP
- IT infrastructure ITOP

- Threat intelligence THIN
- Information management IRMG
- Service desk and incident management USUP
- Information security SCTY
- Research RSCH

SFIA skills are defined by levels of responsibility, based on autonomy, influence, complexity, business skills, and knowledge. Although this unit may cover knowledge and skills at higher levels, it is expected that graduates of undergraduate degrees will be capable of operating at Level 2 overall.

#### Seoul Accord

The UC generic attributes address graduate attributes 1, 6, 7, 9, and 10 of the [Seoul Accord](#). The remaining graduate attributes that are covered in this unit are:

2. Knowledge for Solving Computing Problems
3. Problem Analysis
5. Modern Tool Usage
8. Computing Professionalism and Society

## Timetable of activities

Week	Textbook Chapters	Lecture Topic	Tute/lab
1	Lecture slides (on Canvas)	Introduction: Computers, Network, and Security, Ethics	No
2	Limoncelli, Ch 1	Desktop Computers	Tute/Lab
3	Limoncelli, Ch 2	Server Computers	Tute/Lab
4	Limoncelli, Ch 15	Support Structure and Helpdesk Operation	Tute/Lab
5	Pfleeger, Ch 2  Stallings, Ch 2	Basic Cryptography	Tute/Lab
6	Stallings, Ch 6	Malicious software	Tute/Lab

7	Stallings, Ch 7, 9	Denial of Services and Firewalls	Tute/Lab
8	class free period		
9	Stallings, Ch 10, 11	Buffer overflow and software security	Tute/Lab
10	Stallings, Ch 12, 27	Operating System Security, Trusted Computing and Multilevel Security	Tute/Lab
11	Stallings, Ch 3, 4	User authentication and Access Control	Tute/Lab
12	Stallings, Ch 22, 23,24	Network Security	Tute/Lab
13	Lecture slides (on Canvas)	Review Lecture	Tute/Lab
14	EXAMINATION PERIOD		
15	EXAMINATION PERIOD		

Note: The timetable of activities is indicative and subject to change as the semester progresses.

## Unit resources

### Required texts

"Computer Security Principles and Practice", 4th Ed , William Stallings and Lawrie Brown, Pearson/Prentice Hall, 2017 (or 3rd Ed, 2015)

"The Practice of System and Network Administration", Thomas A. Limoncelli and Christina J. Hogan, Addison-Wesley, 2002 (eReserve available - recommended reading only)

"The code book: the science of secrecy from ancient Egypt to quantum cryptography", Simon Singh, Anchor Books (recommended reading only)

"Security in Computing", 4th Edition, Charles P. Pfleeger and Shari Lawrence Pfleeger, Prentice Hall, 2007 (recommended reading only)

# Materials and equipment

Personal laptop computers are highly desirable, but not essential.

## Unit website

Each unit you are enrolled in has an online teaching site in the learning management system UCLearn. You access UCLearn through [MyUC](#).

## Assessment

### Assessment item details

#### Quiz 1

#### Due date

Week 3, Sunday 23:59

#### Weighting

5%

#### Assessment details

An online quiz on basic computer security related concepts aiming to give students early feedback. Further details to be provided on Canvas.

#### Addresses learning outcomes

- On successful completion of this unit, students will be able to:
- 1. Describe the basic concepts of various encryption algorithms and choose appropriate encryption algorithms for applications;
  - 2. Explain security threats, such as malicious software and DOS etc. and apply appropriate counter measures, such as firewall, multiple security models, and authentication and authorisation etc;

#### Related graduate attributes

1. UC graduates are professional
  - communicate effectively
  - display initiative and drive, and use their organisation skills to plan and manage their workload
  - employ up-to-date and relevant knowledge and skills
  - take pride in their professional and personal integrity
  - use creativity, critical thinking, analysis and research skills to solve theoretical and real-world problems
2. UC graduates are global citizens
  - behave ethically and sustainably in their professional and personal lives
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  - reflect on their own practice, updating and adapting their knowledge and skills for continual professional and academic development

#### Quiz 2

#### Due date

Week 6, Sunday 23:59

#### Weighting

10%

## Assessment details

An online quiz aimed at assessing students' understanding of theoretical and practical aspects of computer security deployment related concepts. The quiz is also designed to provide feedback on student learning progress. Further details to be provided on Canvas.

## Addresses learning outcomes

On successful completion of this unit, students will be able to: 1. Describe the basic concepts of various encryption algorithms and choose appropriate encryption algorithms for applications;

- 2. Explain security threats, such as malicious software and DOS etc. and apply appropriate counter measures, such as firewall, multiple security models, and authentication and authorisation etc;
- 4. Further strengthen important generic skills, such as communication, analysis and inquiry, problem solving, independent and group working, and professionalism and social responsibility.

## Related graduate attributes

### 1. UC graduates are professional

- communicate effectively
- display initiative and drive, and use their organisation skills to plan and manage their workload
- employ up-to-date and relevant knowledge and skills
- take pride in their professional and personal integrity
- use creativity, critical thinking, analysis and research skills to solve theoretical and real-world problems

### 2. UC graduates are global citizens

- adopt an informed and balanced approach across professional and international boundaries
- behave ethically and sustainably in their professional and personal lives
- make creative use of technology in their learning and professional lives

### 3. UC graduates are lifelong learners

- evaluate and adopt new technology
- reflect on their own practice, updating and adapting their knowledge and skills for continual professional and academic development

## Quiz 3

## Due date

Week 9, Sunday 23:59

## Weighting

15%

## Assessment details

An online quiz aimed at assessing students' understanding of theoretical and practical aspects of computer security problems and available solutions. The quiz is also designed to provide feedback on student learning progress. Further details to be provided on Canvas.

## Addresses learning outcomes

On successful completion of this unit, students will be able to: 1. Describe the basic concepts of various encryption

- algorithms and choose appropriate encryption algorithms for applications;
- 2. Explain security threats, such as malicious software and DOS etc. and apply appropriate counter measures, such as firewall, multiple security models, and authentication and authorisation etc;
  - 4. Further strengthen important generic skills, such as communication, analysis and inquiry, problem solving, independent and group working, and professionalism and social responsibility.

## Related graduate attributes

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  - communicate effectively
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### Quiz 4

## Due date

Week 12, Sunday 23:59

## Weighting

20%

## Assessment details

An online quiz aimed at assessing students' understanding of theoretical and practical aspects of computer security problems and available solutions. The quiz is also designed to provide feedback on student learning progress. Further details to be provided on Canvas.

## Addresses learning outcomes

- On successful completion of this unit, students will be able to:
1. Describe the basic concepts of various encryption algorithms and choose appropriate encryption algorithms for applications;
  - 3. Undertake the basic tasks in managing IT infrastructure in a hypothetical or real case scenario, including desktop and server and computers, network, help desk operation, and security; and
  - 4. Further strengthen important generic skills, such as communication, analysis and inquiry, problem solving, independent and group working, and professionalism and social responsibility.

## Related graduate attributes

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## Engagement

### Due date

Over the semester

### Weighting

10%

### Assessment details

Active participation in discussions during tutorials and completion of lab tasks. Further details to be provided on Canvas.

### Addresses learning outcomes

- On successful completion of this unit, students will be able to:
1. Describe the basic concepts of various encryption algorithms and choose appropriate encryption algorithms for applications;
  2. Explain security threats, such as malicious software and DOS etc. and apply appropriate counter measures, such as firewall, multiple security models, and authentication and authorisation etc;
  3. Undertake the basic tasks in managing IT infrastructure in a hypothetical or real case scenario, including desktop and server and computers, network, help desk operation, and security; and
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### Related graduate attributes

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## Assignment

## Due date

Assignment Report to be submitted on Canvas in Week 12 (20%), Friday 23:59

Assignment Evaluation (Online Quiz) based on the topics covererd in the assignment questions to be conducted during tute/lab times in Week 13 (20%), during tute/lab times.

## Weighting

40%

## Assessment details

The assessmnet item consists of a range of questions designed to assess deeper understanding of concepts related to comuter security and support in IT infrastructure. It is a summative assessment designed to evalue student learning and provide feedback. The assignment report is a group task to be carried out in a group of 2 - 3 students. Details to be provided in an assignment documet that will be available on Canvas.

## Addresses learning outcomes

On successful completion of this unit, students will be able to: 1. Describe the basic concepts of various encryption algorithms and choose appropriate encryption algorithms for applications;

- 2. Explain security threats, such as malicious software and DOS etc. and apply appropriate counter measures, such as firewall, multiple security models, and authentication and authorisation etc;
- 3. Undertake the basic tasks in managing IT infrastructure in a hypothetical or real case scenario, including desktop and server and computers, network, help desk operation, and security; and
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## Related graduate attributes

### 1. UC graduates are professional

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## Extensions

Students can apply for an extension to the submission due date for an assessment item due to extenuating, evidenced circumstances (specific details are found in the [Assessment Procedures](#)). An extension must be applied for before the due date. Documentary evidence (e.g. medical certificate) will be expected for an extension to be granted, however this will not guarantee that the application will be successful. The Unit Convener or relevant Program Director/Course Convener will decide whether to grant an extension and the length of the extension.

An Assignment Extension form is available from the [Student Forms](#) page.

## Late submissions

The following late submission period and penalty is applicable to any teaching period commencing after 1 April 2024.

To support the provision of timely feedback to students within the unit, late penalties will apply for summative assessments where late submission is permitted. Late submissions without an approved extension or reasonable adjustment will result in a penalty of a mark reduction of 10% of the maximum available marks for the assessment item per day (or part thereof) up to and including three calendar days. If a student submits more than three calendar days late without an approved extension or reasonable adjustment, the student will be allocated a mark of zero for that assessment, with no feedback provided.

Approval of extensions based on extenuating circumstances will be dependent upon the production of supporting documentation and at the discretion of the unit convener.

For teaching periods commencing prior to 1 April 2024, a late penalty of 5 % of the maximum available marks for the assessment item per day (or part thereof) was applied up to and including seven calendar days. An assignment submitted over 7 days late will not be accepted.

## Special assessment requirements

An aggregate mark of 50% is required to pass the unit.

The final marks of a student are calculated by the following formula:

Final marks (100%) = Quiz 1 (5%) + Quiz 2 (10%) + Quiz 3 (15%) + Quiz 4 (20%) + Assignment (40%) + Engagement (10%)

The final grade of a student is determined according to the following table:

85 <= Final marks <= 100	Final grade = HD
75 <= Final marks < 85	Final grade = DI
65 <= Final marks < 75	Final grade = CR
50 <= Final marks < 65	Final grade = P
0 <= Final marks < 50	Final grade = FAIL (NX, NC or NN)

## Supplementary assessment

Refer to the [Assessment Policy](#) and [Assessment Procedures](#)

## Academic integrity

Students have a responsibility to uphold University standards on ethical scholarship. Good scholarship involves building on the work of others and use of others' work must be acknowledged with proper attribution made. Cheating, plagiarism, and falsification of data are dishonest practices that contravene academic values. Refer to the University's [Student Charter](#) for more information.

To enhance understanding of academic integrity, all students are expected to complete the Academic Integrity Module (AIM) at least once during their course of study. You can access this module within [UCLearn \(Canvas\)](#) through the 'Academic Integrity and Avoiding Plagiarism' link in the [Study Help](#) site.

## Use of Text-Matching Software

The University of Canberra uses text-matching software to help students and staff reduce plagiarism and improve understanding of academic integrity. The software matches submitted text in student assignments against material from various sources: the internet, published books and journals, and previously submitted student texts.

## Student responsibility

### Learner engagement

Activities	Estimated hours
Lectures: 2 hours per lecture	24
Tute/lab: 2 hours per tute/lab	22
Preview and review of lectures and tute/lab 3 hours/week, 12 times	36
4 Quizzes (preparation and attempt)	28
Assignment 40 hours over the semester	40
Total	150

## Inclusion and engagement

It is strongly recommended that students who need assistance in undertaking the unit because of disability or an ongoing health condition register with the [Inclusion and Engagement Office](#) as soon as possible so that reasonable adjustment arrangements can be made.

## Participation requirements

Your participation in both class and online activities will enhance your understanding of the unit content. Lack of participation may result in your inability to satisfactorily pass assessment items as well as not achieving engagement marks.

## Withdrawal

If you are planning to withdraw please discuss with your Unit Convener. UC College students must also seek advice from the College.

## Required IT skills

Basic understanding of programming, computer hardware, operating systems, and networking.

This unit may involve online meetings in real time using the Virtual Room in your UCLearn teaching site. The Virtual Room allows you to communicate in real time with your lecturer and other students. To participate verbally, rather than just typing, you will need a microphone. For best audio quality we recommend a microphone and speaker headset. For more information and to test your computer, go to the Virtual Room in your UCLearn site and 'Join Course Room'. This will trigger a tutorial to help familiarise you with the functionality of the virtual room.

## Work integrated learning

N/A

## Student feedback

All students enrolled in this unit will have opportunities to provide anonymous feedback on the unit through the InterFace Student Experience Questionnaire (ISEQ). The request for your feedback will be posted on your InterFace page at least twice during a teaching period. InterFace can be accessed through MyUC.

## Changes to unit based on student feedback

Minor adjustments have been made to assessment structures and tute/lab activities. For example, exam has been removed and replaced by other formative and summative assessment items that are conducted throughout the semester. The assignment has also been redesigned to be a group task.

## Authority of this unit outline

This unit outline must be read in conjunction with the University of Canberra's Policies and Procedures, including the [Assessment Policy](#) and associated [Procedure](#). The Assessment Policy and Assessment Procedure include information on matters such as plagiarism, grade descriptors, moderation, feedback, and deferred exams.

Any change to the information contained in the Academic content and Assessment sections of this document, will only be made by the Unit Convener if the written agreement of the Program Director and a majority of students has been obtained; and if written advice of the change is then provided on the teaching site in UCLearn. If this is not possible, written advice of the change must be then forwarded to each student enrolled in the unit at their registered term address. Any individual student who believes themselves to be disadvantaged by a change is encouraged to discuss the matter with the Unit Convener.

## Authority Text

### Main

Exception – Potential changes to a unit's learning activities and assessment items (Approved Academic Board 2020)

In the event of Australian Government and/or ACT Government directive, such as those requiring physical distancing and restrictions on movement because of a pandemic, learning activities and/or assessment items in some units may change. These changes will not be updated in the published Unit Outline but will be communicated to students via the unit's UCLearn (Canvas) teaching site. The new learning activities and/or assessment items will continue to meet the unit's learning outcomes, as described in the Unit Outline.

New learning activities and/or assessment items will be available on the unit's UCLearn (Canvas) teaching site. Please contact the Unit Convener with any questions.

**Printed on 04, June, 2024**

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CRICOS 00212K

TEQSA Provider ID: PRV12003 (Australian University)

UC acknowledges the Ngunnawal people, traditional custodians of the lands where Bruce campus is situated. We wish to acknowledge and respect their continuing culture and the contribution they make to the life of Canberra and the region. We also acknowledge all other First Nations Peoples on whose lands we gather.