



# COMP6320

## Offensive Security

Session 1, In person-scheduled-weekday, North Ryde 2022

*School of Computing*

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## General Information

Unit convenor and teaching staff

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Credit points

10

Prerequisites

Admission to MInfoTechCyberSec or GradCertInfoTech

Corequisites

Co-badged status

This unit is co-badged with COMP2320.

Unit description

This unit provides an introduction to ethical hacking and offensive security. Strong emphasis is given to ethics and ethical behaviour as students are exposed to penetration techniques and methods. In other words, students are taught how to systematically look for and exploit vulnerabilities in software, protocols and systems in order to report those vulnerabilities and improve the safety of those software, protocols and systems. Communication, in speaking and writing plays a critical role in this unit. The most proficient students in this unit may be selected to represent the University at various national pentesting competitions and challenges.

## Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at <https://www.mq.edu.au/study/calendar-of-dates>

## Learning Outcomes

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

**ULO1:** Explain the importance of and demonstrate ethics and ethical behaviour in relation to offensive security and penetration testing.

**ULO2:** Perform scoping, vulnerability scanning and reconnaissance on a range of devices, platforms, protocols, systems and organisations.

**ULO3:** Exploit vulnerabilities for a range of purposes, including access control, payload delivery, privilege escalation, etc.

**ULO4:** Effectively communicate results, both verbally and in-writing, to technical and non-technical audiences.

## General Assessment Information

### General Assessment Information

#### Assignments

Assignment work must be written clearly, with good grammar, correct word usage, correct punctuation, and lack of spelling errors. Poor or bad expression will be penalized. Wherever required, all written work must be properly referenced and conform to standard stylistic conventions.

#### Late Submissions

Late submissions will not be accepted without an approved Special Consideration request. Assessments submitted after the due date will receive a mark of zero.

## Assessment Tasks

Name	Weighting	Hurdle	Due
<u>In-Class Exercises</u>	18%	No	Weekly
<u>CTF#1</u>	24%	No	Week 4
<u>CTF#2</u>	24%	No	Week 9
<u>CTF#3</u>	24%	No	Week 12
<u>Research and Presentation</u>	10%	No	Week 13

### In-Class Exercises

Assessment Type <sup>1</sup>: Quiz/Test

Indicative Time on Task <sup>2</sup>: 9 hours

Due: **Weekly**

Weighting: **18%**

During workshops, you will be set an in-class exercise related to that week's lecture topic to complete during the class. Your work will be checked and marked in the workshop class in which it is completed. No late submissions are accepted.

On successful completion you will be able to:

- Explain the importance of and demonstrate ethics and ethical behaviour in relation to offensive security and penetration testing.

- Perform scoping, vulnerability scanning and reconnaissance on a range of devices, platforms, protocols, systems and organisations.
- Exploit vulnerabilities for a range of purposes, including access control, payload delivery, privilege escalation, etc.

## CTF#1

Assessment Type <sup>1</sup>: Project

Indicative Time on Task <sup>2</sup>: 12 hours

Due: **Week 4**

Weighting: **24%**

This capture-the-flag exercise will be completed during scheduled class time. Teams will compete against each other and students will be assessed individually via a report to be submitted one week after the CTF.

On successful completion you will be able to:

- Perform scoping, vulnerability scanning and reconnaissance on a range of devices, platforms, protocols, systems and organisations.
- Exploit vulnerabilities for a range of purposes, including access control, payload delivery, privilege escalation, etc.
- Effectively communicate results, both verbally and in-writing, to technical and non-technical audiences.

## CTF#2

Assessment Type <sup>1</sup>: Project

Indicative Time on Task <sup>2</sup>: 12 hours

Due: **Week 9**

Weighting: **24%**

This capture-the-flag exercise will be completed during scheduled class time. Teams will compete against each other and students will be assessed individually via a report to be submitted one week after the CTF.

On successful completion you will be able to:

- Perform scoping, vulnerability scanning and reconnaissance on a range of devices,

platforms, protocols, systems and organisations.

- Exploit vulnerabilities for a range of purposes, including access control, payload delivery, privilege escalation, etc.
- Effectively communicate results, both verbally and in-writing, to technical and non-technical audiences.

## CTF#3

Assessment Type <sup>1</sup>: Project

Indicative Time on Task <sup>2</sup>: 12 hours

Due: **Week 12**

Weighting: **24%**

This capture-the-flag exercise will be completed during scheduled class time. Teams will compete against each other and students will be assessed individually via a report to be submitted one week after the CTF.

On successful completion you will be able to:

- Perform scoping, vulnerability scanning and reconnaissance on a range of devices, platforms, protocols, systems and organisations.
- Exploit vulnerabilities for a range of purposes, including access control, payload delivery, privilege escalation, etc.
- Effectively communicate results, both verbally and in-writing, to technical and non-technical audiences.

## Research and Presentation

Assessment Type <sup>1</sup>: Presentation

Indicative Time on Task <sup>2</sup>: 5 hours

Due: **Week 13**

Weighting: **10%**

Student groups will research a well known vulnerability (chosen by the teaching staff) and provide a presentation and demonstration of the vulnerability. Each presentation will be followed by a brief question-and-answer session. Group members will submit a report individually with a focus on the ethical implications of the use and misuse of the vulnerability.

On successful completion you will be able to:

- Explain the importance of and demonstrate ethics and ethical behaviour in relation to offensive security and penetration testing.
  - Effectively communicate results, both verbally and in-writing, to technical and non-technical audiences.
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<sup>1</sup> If you need help with your assignment, please contact:

- the academic teaching staff in your unit for guidance in understanding or completing this type of assessment
- the [Writing Centre](#) for academic skills support.

<sup>2</sup> Indicative time-on-task is an estimate of the time required for completion of the assessment task and is subject to individual variation

## Delivery and Resources

### Classes

Each week you should attend two hours of lectures, and a three hour practical workshop. For details of days, times and rooms consult the [timetables webpage](#).

**Note** that practicals workshops (lab sessions) commence in **week 1**. The week-by-week details of the practical (lab) classes will be available from iLearn.

**You must attend the practical that you are enrolled in.**

### Textbook and Reading Materials

The following two textbooks contain the bulk of the weekly readings.

1. Penetration Testing: A Hands-On Introduction to Hacking, Georgia Weidman ([available online from the library](#)).
2. The Web Application Hacker's Handbook: Finding and Exploiting Security Flaws, Dafydd Stuttard and Marcus Pinto ([available online from the library](#)).

### Web Resources

#### Unit Websites

COMP6320 is administered via [iLearn \(http://ilearn.mq.edu.au/\)](http://ilearn.mq.edu.au/).

#### Lecture recordings

Digital recordings of lectures *may* be available. When available they will be linked from iLearn.

### General Notes

In this unit, you should do the following:

- Attend lectures, take notes, ask questions.
- Attend your weekly Practical session.
- Read appropriate sections of the text, add to your notes and prepare questions for your lecturer/tutor.
- Work on any assignments that have been released.
- Ensure that you participate in the CTF exercises (note that this will occur during the scheduled lecture period).
- Ensure that you participate in the group presentations (note that this will occur during the scheduled lecture period).
- **Note that this means that lecture attendance will be compulsory during weeks 4, 9, 12, and 13.**

Lecture notes will be made available each week but these notes are intended as an outline of the lecture only and are not a substitute for your own notes or the recommended reading list.

## Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central \(https://policies.mq.edu.au\)](https://policies.mq.edu.au). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- [Academic Appeals Policy](#)
- [Academic Integrity Policy](#)
- [Academic Progression Policy](#)
- [Assessment Policy](#)
- [Fitness to Practice Procedure](#)
- [Assessment Procedure](#)
- [Complaints Resolution Procedure for Students and Members of the Public](#)
- [Special Consideration Policy](#)

Students seeking more policy resources can visit [Student Policies \(https://students.mq.edu.au/support/study/policies\)](https://students.mq.edu.au/support/study/policies). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

To find other policies relating to Teaching and Learning, visit [Policy Central \(https://policies.mq.edu.au\)](https://policies.mq.edu.au) and use the [search tool](#).

## Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: <https://students.mq.edu.au/admin/other-resources/student-conduct>

## Results

Results published on platform other than [eStudent](#), (eg. iLearn, Coursera etc.) or released

directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in [eStudent](#). For more information visit [ask.mq.edu.au](http://ask.mq.edu.au) or if you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto:globalmba.support@mq.edu.au)

## Academic Integrity

At Macquarie, we believe [academic integrity](#) – honesty, respect, trust, responsibility, fairness and courage – is at the core of learning, teaching and research. We recognise that meeting the expectations required to complete your assessments can be challenging. So, we offer you a range of resources and services to help you reach your potential, including free [online writing and maths support](#), [academic skills development](#) and [wellbeing consultations](#).

## Student Support

Macquarie University provides a range of support services for students. For details, visit <http://students.mq.edu.au/support/>

### The Writing Centre

[The Writing Centre](#) provides resources to develop your English language proficiency, academic writing, and communication skills.

- [Workshops](#)
- [Chat with a WriteWISE peer writing leader](#)
- [Access StudyWISE](#)
- [Upload an assignment to Studiosity](#)
- [Complete the Academic Integrity Module](#)

The Library provides online and face to face support to help you find and use relevant information resources.

- [Subject and Research Guides](#)
- [Ask a Librarian](#)

## Student Services and Support

Macquarie University offers a range of [Student Support Services](#) including:

- [IT Support](#)
- [Accessibility and disability support](#) with study
- Mental health [support](#)
- [Safety support](#) to respond to bullying, harassment, sexual harassment and sexual assault
- [Social support including information about finances, tenancy and legal issues](#)



## Student Enquiries

Got a question? Ask us via [AskMQ](#), or contact [Service Connect](#).

## IT Help

For help with University computer systems and technology, visit [http://www.mq.edu.au/about\\_us/offices\\_and\\_units/information\\_technology/help/](http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/).

When using the University's IT, you must adhere to the [Acceptable Use of IT Resources Policy](#). The policy applies to all who connect to the MQ network including students.