Welcome to UQ Cyber

Orientation Semester 2, 2020

Master of Cyber Security
Graduate Diploma in Cyber Security
Graduate Certificate in Cyber Security
In this session

• Welcome – Program Director Professor Ryan Ko
• Meet the Team
• Our Programs – Convenor, MCyber & Dep. Director - Assoc Prof John Williams
• Q&A
• Advising breakout sessions
Welcome to UQ Cyber
A multidisciplinary Group

**Industry**

AusCERT and members

Information Technology Services Division

Industry, Governments & International Organisations

**Research**

Faculties:
- Engineering, Architecture and Information Technology
- Science (Maths and Physics)
- Humanities and Social Sciences
- Business, Economics and Law
- Medicine

Centre for Policy Futures
Institute for Social Science Research
AusCERT Research

**Teaching**

CPD Courses

Bachelor of Computer Science (Cyber Security Major)

Master of Cyber Security
Grad Dipl in Cyber Security (4 Fields of Study)
Grad Cert in Cyber Security

PhD & MPhil
A multidisciplinary team

More than 50 academics and practitioners working on Cyber Security from within different disciplines

• Engineering & Information Communication Technology
• Mathematics and Physics
• Policy and National Security Studies
• Business
• Criminology and Law
• Incident Response (AusCERT)
Career opportunities

• Massive global skills shortage in the cyber security sector

• CISCO ¹ estimates more than one million job openings globally

• Australia will need up to 18,000 additional cyber security professionals by 2026 ²

• Entry level pay up about US $ 10,000 better than national median salary, with C suites in US $ 500,000 range ³

”Dear kids: If you want a job in five years, study computer science. If you want a job forever, study computer security.” Box CEO Aaron Levie ⁴

² AustCyber Australian Cyber Security Sector Competitiveness Plan, 2018
⁴ Aaron Levie@levie, twitter 22 Dec 2014
## Diversity in Cyber Security

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<tr>
<th>Cyber Defence</th>
<th>Leadership</th>
<th>Cyber Criminology</th>
<th>Cryptography</th>
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</thead>
<tbody>
<tr>
<td>Information Security Architect</td>
<td>Chief Information Security Officers (CISO)</td>
<td>Cyber Crime and Privacy Policy Advisor</td>
<td>Signals Intelligence Officer</td>
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<tr>
<td>Cyber Security Analyst</td>
<td>Chief Executive Officer (CEO)</td>
<td>Digital Forensics Expert</td>
<td>Malware Analysts</td>
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<tr>
<td>Cyber Security Consultant</td>
<td>Executive Board and Director Positions</td>
<td>Cyber Crime Investigator</td>
<td>Cryptographic Systems Engineer</td>
</tr>
<tr>
<td>Penetration Tester</td>
<td>Information Security Manager</td>
<td>Government Policy Advisor</td>
<td>Financial and Payment Systems Engineer</td>
</tr>
<tr>
<td>Information Security Specialist</td>
<td>Entrepreneurship in Cyber Security</td>
<td>Anti-money Laundering Investigator</td>
<td>Defence Intelligence Officer</td>
</tr>
<tr>
<td>Security Systems Administrator</td>
<td>Managerial Positions in IT and Cyber Security</td>
<td>Dark Web Intelligence Expert</td>
<td>Applied Cryptographer</td>
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Diversity of Thought

- Diverse backgrounds – not just Computer Science or IT
- Broad spectrum of deep-discipline interest (fields of study)
- Reflection of working life – build networks by working together in multi-disciplinary teams to tackle cyber security challenges
Classroom & Practical learning

- Lectures – leading academics and industry professionals
- Small Group Tutorials
- Mixed online/on-campus delivery Sem 2 2020
- Capstone project – facilitated industry placements or research orientated project
- Co-curricular opportunities – e.g. UQ Cyber Squad
UQ Cyber Squad – UQ’s elite student cyber security competition squad focused on online, domestic and international cyber competitions (e.g. Cyber 9/12, DEFCON CTF). As well as competing and taking out prices at the top international level, the squad also runs regular training sessions for all of its members – from beginners to experts – to teach skills, build capability and pass on knowledge.

DEADBEEF society – A student society focused on upskilling like-minded students in cyber security technical skills.
World-Class Facilities

Industry 4.0 UQ Energy TestLab

- State-of-the-art hardware and software facilities for cyber-physical system security with representative critical infrastructure scenarios and datasets for cyber security research and testing

- Cyber security test facilities include programmable logic controllers (PLCs), human machine interfaces, historians, rugged switches, and firewalls from Siemens, Schneider, and Rockwell
Coming in 2021

Training Security Operations Centre
• a simulated environment for training in SOC operational and management roles
• a ‘living lab’ for evaluation and deployment of experimental research tools and evaluation of computer-human interaction

Cyber Range
• a bespoke space for red and blue teams to contest a virtual environment - hacking and defending, to practice facing real world cyber scenarios and combatting cyber threats

Device Testing Lab
• a lab for students to conduct security and vulnerability assessment on a wide variety of hardware – from servers to desktops; mobile devise to IoT devices….
Cyber Hub in development...
Capstones – A pathway for your career

• Industry or research

• Placement over 2 semesters:
  o CYBR7901 – 1 day per week (proposal)
  o CYBR7902 – 3 days per week (build)

• Scholarships may be available (industry placement)
Meet the Team
UQ Cyber Director: Professor Ryan Ko

- Professor, Chair and Director of UQ Cyber Security

- Advises INTERPOL, ministers, governments, and several listed companies on cyber security technologies.

- Wrote the cyber security ISO standard ISO/IEC 21878 and wrote the NZ level-6 curriculum on cyber security.

- Across HP Labs and academia: invented cyber security tools, e.g. HP security tools and data tracking tools used globally (e.g. USA Treasury, IRS, Singapore Government Cloud)

- Has taught thousands of students, and supervised about 80+ research thesis students. Many are doing very well!
Your lecturers

Interdisciplinary Core

Prof. Ryan Ko
Assoc. Prof John Williams
Assoc. Prof David Ross
Dr Naipeng Dong
Dr Jonah Rimer
Dr Ivano Bongiovanni
Prof. John Swinson

CYBR7001
Fundamentals of Cyber Security

CYBR7002
Information Security Essentials

CRIM7080
Cyber Criminology & Global Security

CYBR7003
Cyber Security Governance, Policy, Ethics & Law
Your lecturers

Cyber Defence

Prof Ryan Ko
Assoc. Prof Dan Kim
Assoc. Prof David Ross
Assoc. Prof Barbara Maenhaut
Dr Guangdong Bai

Dr Peter O'Shea
Dr Joel Fernwick
Dr Mahsa Baktashmotlagh
Dr Siqi Ma
Dr Naipeng Dong
Dr Ash Rahimi
Your lecturers

Leadership

Dr Ivano Bongiovanni  Dr Micheal Axelsen  Assoc. Prof Tyler Okimoto

Dr Vicky Comino  Prof John Swinson  Mr Anthony Austin
Your lecturers

Cyber Criminology

Professor Lorraine Mazerolle

Dr Jonah Rimer

Dr David Mount
Your lecturers

Cryptography

Professor Benjamin Burton
Assoc. Prof Barbara Maenhaut
Dr Poh Hillock
Dr Ross McVinish
Professor Darryn Bryant
Professional Support Staff

Catherine Hrabar
Operations Officer UQ Cyber
[c.hrabar@uq.edu.au](mailto:c.hrabar@uq.edu.au)
Level 4, Building 78/ 425B

ITEE Coursework Studies Team
Level 4, Building 78 (GPS)
[studentenquiries@itee.uq.edu.au](mailto:studentenquiries@itee.uq.edu.au)
Our Cyber Security Programs
UQ Terminology

- **Program**: Degree or Graduate Certificate/Diploma that you are studying, e.g. Master of Cyber Security

- **Field of Study**: a specialisation within a postgraduate program e.g. Cyber Criminology

- **Course**: subject e.g. Fundamentals of Cyber Security

- **Credit Unit (#)**: measure of workload for a course (most courses = # 2 units)

- **Standard load**: 8 units (typically 4 courses) per semester
Postgraduate Cyber Security Suite

• Graduate Certificate = 8 units (4 courses) – no specialisation
• Graduate Diploma = 16 units (8 courses) - in a chosen field of study
• Masters = 24 units (12 courses – 9 + 3 capstone) – in a FoS
• Masters = 32 units (16 courses – 13 + 3 capstone) – in a FoS
4 Fields of Study

- Cyber Defence
- Cryptography
- Leadership
- Cyber Criminology
Program Overview

- **Cyber Security Core**
  - 4 compulsory courses
  - 6 months
  - EVERYONE does these

- **Foundation**
  - 4 courses
  - 6 months
  - #32 Master only

- **Field of Study Specialisation**
  - 3 compulsory courses & 2 electives
  - 12 months
  - Master #24, #32 & Grad Dip (1 elective)

- **Capstone**
  - Master #24, #32
Sample Study Plan: Cyber Defence #32

<table>
<thead>
<tr>
<th>S2, 2020</th>
<th>S1, 2021</th>
<th>S2, 2021</th>
<th>S1, 2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>CYBR7001 Fundamentals of Cyber Security</td>
<td>CYBR7002 Information Security Essentials</td>
<td>COMP7711 Cyber Incident Response</td>
<td>COMP7320 Vulnerability Assessment &amp; Penetration Testing</td>
</tr>
<tr>
<td>CRIM7080 Cyber Criminology &amp; Global Security</td>
<td>CYBR7003 Cyber Security Governance, Policy, Ethics &amp; Law</td>
<td>ELECTIVE</td>
<td>COMP7710 AI for Cyber Security</td>
</tr>
<tr>
<td>CSSE7030 Introduction to Software Engineering</td>
<td>CSSE7231 Computer Systems Principles and Programming</td>
<td>ELECTIVE</td>
<td>CYBR7902 (4 units) Capstone Project 2</td>
</tr>
<tr>
<td>MATH7861 Discrete Mathematics</td>
<td>INFS7901 Database Principles</td>
<td>CYBR7901 Capstone Project 1</td>
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Visit our Academic Advice Page for more study plans and useful resources:

[Cyber Security Academic Advice](#)
Remember

- Not all courses are offered in every semester (esp. CRIM7080)
- Be careful about course pre-requisites
- Pay special attention if you are part time. NB International students need to maintain full-time status i.e. 4 courses per semester

MAKE A STUDY PLAN
Plan now for graduation eligibility in the semester you plan to finish
Responsibilities

- **We** are responsible for helping you understand your study plan, giving you academic advice and teaching you

- **You** are responsible for:
  - Enrolment & choosing electives
  - Understanding your study plan and timetable
  - Regularly checking course information on Learn.UQ (sometimes called BlackBoard)
  - Following the Program Rules [Master Cyber Security](#), [Grad Dipl in CyberSec](#), [Grad Cert in CyberSec](#)
  - Attendance, Assignments and Assessments
  - Academic Integrity

Ask questions, seek academic advice, check course pages, go to lectures and tutorials…
Academic Integrity

- Academic Merit: Original effort
- Plagiarism: Proper referencing
- Collusion: Know your boundaries
- Ignorance is not a defence
- Misconduct Guidelines

Severe penalties!

When in doubt, consult your lecturer
Surviving the workload

Preparation
- Get a head start by reading the ECP (electronic course profile) for your courses and organizing recommended study resources (readings, textbooks etc)
- Carefully read the assumed knowledge clause

Study
- Make a weekly study schedule – courses are progressive
- Focus on learning outcomes

Assessment
- Make sure that you understand the assessment criteria
Getting help

• The course coordinators, lectures and tutors are there to help you. Seek them out.

• Your program Academic Advisor is Assoc Prof John Williams – make an appointment via https://www.itee.uq.edu.au/master-cyber-security-academic-advice

• Ask questions! There are no dumb questions.

• Chat with fellow students but don’t get involved in plagiarism!

• Check your student email and course information pages (Learn.UQ) often
Important Dates

UQ Academic Calendar

- 31-07-20  Last day to request a change of program via mySI-net
- 03-08-20  Semester 2 classes commence
- 14-08-20  Semester 2 - last day for addition of course or alteration of enrolment
- 31-08-20  Semester 2 Census Date - last day for dropping courses without financial liability
- 30-10-20  Last date to drop Sem 2 courses without academic penalty (financial liability remains)

Note: Dates correct at time of publication, refer to UQ website for the authoritative version
UQ Online

• Study at UQ: https://future-students.uq.edu.au/study

• mySI-net: https://www.sinet.uq.edu.au

• Library: http://www.library.uq.edu.au

• Campus Maps: http://www.uq.edu.au/maps
UQ Cyber Online

• ITEE homepage: https://www.itee.uq.edu.au
• UQ Cyber homepage: https://www.itee.uq.edu.au/research/cyber-security
• Academic Advice: https://www.itee.uq.edu.au/master-cyber-security-academic-advice
• Course Pages (Blackboard): https://learn.uq.edu.au
Questions?

Contact Assoc. Prof John Williams j.williams1@uq.edu.au
Welcome to studying Cyber Security at a Top 50 University

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CRICOS code 00025B