UNSW Course Outline

ZEIT8029 Mobile Network and Memory Forensics - 2024

Published on the 09 Feb 2024

General Course Information

Course Code : ZEIT8029
Year : 2024
Term : Semester 1
Teaching Period : Z1
Is a multi-term course? : No
Faculty : UNSW Canberra
Academic Unit : School of Systems and Computing
Delivery Mode : Online
Delivery Format : Standard
Delivery Location : UNSW Canberra at ADFA
Campus : UNSW Canberra
Study Level : Postgraduate
Units of Credit : 6

Useful Links

Handbook Class Timetable

Course Details & Outcomes

Course Description

This course focuses on the forensic investigation of illicit activity using mobile networks and artefacts attached to mobile networks (devices and memory). Students will reinforce concepts such as the digital forensic method, intent, and its application. The course will then cover

technical topics such as network, memory, disk, and mobile device artefact analysis using contemporary open source tools, techniques and procedures. Students will be expected to demonstrate both their theoretical and technical understanding through the completion of practical exercises in a simulated operational environment.

This course comprises nine (9) separate modules of intensive theory and practical sessions delivered remotely in conjunction with the UNSW Canberra campus. Theory taught during lectures is reinforced with practical hands-on labs.

The intended audience for this course are students who have some experience or had some exposure to the field of digital forensics in general. Otherwise, students should expect some digital forensics pre-reading to be required. Students are also expected to be relatively comfortable working in a Linux command line environment.

On successful completion of this course a student will be able to

- Explain mobile network and memory forensic principles, methodologies, and processes, and compare and contrast related forensics tools and their output
- Explain the process of mobile network and memory forensics and the legal requirements relating to concepts such as chain of custody and evidence handling
- Conduct and defend a forensic examination in the areas mobile network and memory forensics
- Formulate a forensic case report and establish capability of presenting evidence to non-technical audiences

Course Aims

To enable students to explain mobile network and memory forensic principles, methodologies, and processes, including related legal requirements, to conduct and defend a forensic examination in mobile network and memory forensics, to formulate a forensic case report, and to establish capability of presenting evidence to non-technical audiences.

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Explain mobile network and memory forensic principles and methodologies, and compare and contrast related forensics tools and their output
CLO2 : Explain the process of mobile network and memory forensics and the legal requirements relating to concepts such as chain of custody and evidence handling
CLO3 : Conduct and defend a forensic examination in the area of mobile networks and memory
CLO4 : Formulate a forensic case report and establish capability of presenting evidence to non-technical audiences

Course Learning Outcomes	Assessment Item
CLO1 : Explain mobile network and memory forensic principles and methodologies, and compare and contrast related forensics tools and their output	• Forensic Method Essay • Minor Case Study
CLO2 : Explain the process of mobile network and memory forensics and the legal requirements relating to concepts such as chain of custody and evidence handling	• Device and Memory Case Study • Forensic Method Essay • Minor Case Study
CLO3 : Conduct and defend a forensic examination in the area of mobile networks and memory	• Network Case Study • Device and Memory Case Study • Minor Case Study
CLO4 : Formulate a forensic case report and establish capability of presenting evidence to non-technical audiences	• Network Case Study • Device and Memory Case Study • Minor Case Study

Learning and Teaching Technologies

Moodle - Learning Management System | Blackboard Collaborate | Discord

Learning and Teaching in this course

Teaching Strategies

The concepts presented in this course require students' demonstration of skill including structured thinking and decision-making in dealing with complex problems. Teaching strategies employed in this course aim to provide an engaging and rewarding educational experience though the development and application of expertise in digital forensic concepts and processes.

The lecture notes provided in the course are synthesised from multiple sources – including computer forensic courses taught at Universities and to government agencies across the world.

An introductory activity is designed to guide student's self-reflection and stimulate their thinking around their achievement of course outcomes.

During the semester, students will get a chance to work on a number of activities designed to give an opportunity to think about and prepare for the major assignment.

Developing Graduate Capabilities

Successful completion of this course contributes to the acquisition of UNSW graduate capabilities. UNSW aspires to develop globally focused graduates who are **rigorous scholars**, capable of **leadership** and **professional practice** in an **international** community.

The Learning Management System

Moodle is the Learning Management System used at UNSW Canberra. All courses have a Moodle site which will become available to students at least one week before the start of semester. Please find all help and documentation (including Blackboard Collaborate) at the Moodle Support page.

UNSW Moodle supports the following web browsers:

» Google Chrome 50+
» Safari 10+
** Internet Explorer is not recommended

** Addons and Toolbars can affect any browser's performance.

Operating systems recommended are:

Windows 7, 10, Mac OSX Sierra, iPad IOS10

For further details about system requirements click here.

Log in to Moodle here.

If you need further assistance with Moodle:

For enrolment and login issues please contact:
IT Service Centre
Email: itservicecentre@unsw.edu.au
Phone: (02) 9385-1333
International: +61 2 9385 1333

For all other Moodle issues please contact:
External TELT Support
Email: externalteltsupport@unsw.edu.au
Phone: (02) 9385-3331

International: +61 2 938 53331

Opening hours:

Monday – Friday 7:30am – 9:30 pm

Saturday & Sunday 8:30 am – 4:30pm

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Forensic Method Essay Assessment Format: Individual	10%	Start Date: Not Applicable Due Date: Week 3: 11 March - 15 March
Minor Case Study Assessment Format: Individual	20%	Start Date: Not Applicable Due Date: Week 5: 25 March - 29 March
Network Case Study Assessment Format: Individual	30%	Start Date: Not Applicable Due Date: Week 9: 06 May - 10 May
Device and Memory Case Study Assessment Format: Individual	40%	Start Date: Not Applicable Due Date: Week 12: 27 May - 31 May

Assessment Details

Forensic Method Essay

Assessment Overview

A short essay based on the activities performed in the first two labs. Students will compare and contrast the output from various digital forensics tools and explain how they would prove their findings are reliable.

Course Learning Outcomes

- CLO1 : Explain mobile network and memory forensic principles and methodologies, and compare and contrast related forensics tools and their output
- CLO2 : Explain the process of mobile network and memory forensics and the legal requirements relating to concepts such as chain of custody and evidence handling

Assessment Length

4000 words

Submission notes

All assessments will be submitted through Moodle and Turnitin.

Assignment submission Turnitin type

This assignment is submitted through Turnitin and students can see Turnitin similarity reports.

Minor Case Study

Assessment Overview

A case study where students will perform a hands-on digital forensic examination of evidence collected as part of an investigation, culminating in formulation and submission of a digital forensic report.

Course Learning Outcomes

- CLO1 : Explain mobile network and memory forensic principles and methodologies, and compare and contrast related forensics tools and their output
- CLO2 : Explain the process of mobile network and memory forensics and the legal requirements relating to concepts such as chain of custody and evidence handling
- CLO3 : Conduct and defend a forensic examination in the area of mobile networks and memory
- CLO4 : Formulate a forensic case report and establish capability of presenting evidence to non-technical audiences

Assessment Length

One (1) spreadsheet and one (1) PDF with relevant figures.

Submission notes

All submissions will be made through Moodle and Turnitin.

Assignment submission Turnitin type

This is not a Turnitin assignment

Network Case Study

Assessment Overview

Major case study part 1: expert's report based on scenarios requiring hands-on examinations of mobile network forensics components.

Course Learning Outcomes

- CLO3 : Conduct and defend a forensic examination in the area of mobile networks and memory
- CLO4 : Formulate a forensic case report and establish capability of presenting evidence to non-technical audiences

Assessment Length

No more than fifteen (15) pages (11pt font, single line spacing)

Submission notes

All submissions will be made through Moodle and Turnitin.

Assignment submission Turnitin type

This assignment is submitted through Turnitin and students can see Turnitin similarity reports.

Device and Memory Case Study

Assessment Overview

Major case study part 2: expert's report based on scenarios requiring hands-on examinations of mobile device and memory forensics components.

Course Learning Outcomes

- CLO2 : Explain the process of mobile network and memory forensics and the legal requirements relating to concepts such as chain of custody and evidence handling
- CLO3 : Conduct and defend a forensic examination in the area of mobile networks and memory
- CLO4 : Formulate a forensic case report and establish capability of presenting evidence to non-technical audiences

Assessment Length

No more than five (5) pages (11pt font, single line spacing)

Submission notes

All submissions will be made through Moodle and Turnitin.

Assignment submission Turnitin type

This assignment is submitted through Turnitin and students can see Turnitin similarity reports.

General Assessment Information

All marks obtained for assessment items during the session are provisional. The final mark as published by the university following the review group meeting is **the only official mark.**

Referencing

In this course, students are required to reference following the APA 6 / Chicago NB referencing style. Information about referencing styles is available at: https://guides.lib.unsw.adfa.edu.au/c.php?g=472948&p=3246720

Academic Integrity and Plagiarism

UNSW has an ongoing commitment to fostering a culture of learning informed by academic integrity. All UNSW staff and students have a responsibility to adhere to this principle of academic integrity. All students are expected to adhere to UNSW's Student Code of Conduct https://www.gs.unsw.edu.au/policy/documents/studentcodepolicy.pdf

Plagiarism undermines academic integrity and is not tolerated at UNSW. It is defined as using the words or ideas of others and passing them off as your own, and can take many forms, from deliberate cheating to accidental copying from a source without acknowledgement.

Grading Basis

Standard

Requirements to pass course

To pass the course, students will need to achieve an overall assessment of 50% or greater.

Late Submission of Assessment

Unless prior arrangement is made with the lecturer or a formal application for special consideration is submitted, a penalty of 5% of the total available mark for the assessment will apply for each day that an assessment item is late up to a maximum of 5 days (120 hours) after which an assessment can no longer be submitted and a grade of 0 will be applied.

Course Schedule

Teaching Week/Module	Activity Type	Content
Week 1 : 26 February - 1 March	Lecture	• Course Introduction • The Discipline of Digital Forensics • The Expert Witness
	Laboratory	Lab 1: Forensic Evidence - Preservation, Chain of Custody, and Forensic Process
Week 2 : 4 March - 8 March	Lecture	Forensic Challenges: • Time & Telco Data • Encryption • Dark Web • Anti-forensics
	Laboratory	Lab 2: Forensic Evidence Recovery
Week 3 : 11 March - 15 March	Lecture	Mobile Forensics
	Laboratory	Lab 3: Mobile Forensics & CCR
	Assessment	Assessment 1: Forensic Method Essay Due: March 17 @ 23:59 AEDT Weight: 10%
Week 5 : 25 March - 29 March	Lecture	Network Forensics
	Laboratory	Lab 4: Network Forensics - Dabber
	Assessment	Assessment 2: Stella Maris Case Study Due: March 31 @ 23:59 AEDT Weight: 20%
Week 6 : 1 April - 5 April	Lecture	Memory Forensics
	Laboratory	Lab 5: Memory Forensics - Cridex
Week 7 : 22 April - 26 April	Lecture	Bringing it together in your expert's report
Week 9 : 6 May - 10 May	Lecture	Q&A, Discussion, Lab Demonstration
	Assessment	Assessment 3: Nitroba Case Study Due: May 12 @ 23:59 AEDT Weight: 30%
Week 11 : 20 May - 24 May	Lecture	Q&A, Discussion, Lab Demonstration
Week 12 : 27 May - 31 May	Assessment	Assessment 4: Caelus Engineering Case Study Due: June 2 @ 23:59 AEDT Weight: 40%

Attendance Requirements

Students are strongly encouraged to attend all classes and review lecture recordings.

General Schedule Information

The first 6 weeks will cover the course material in a lecture/lab format. The remaining weeks of the semester are dedicated to Q&A and general discussion, as well as demonstration of the labs and explanations of the assessments every other week.

Course Resources

Prescribed Resources

There is no compulsory text for this course. Resources, including required and recommended reading, will be made available on the Moodle page.

Students will also be required to obtain ISO standards. These can be obtained from the UNSW

Library's SAI Global subscription.

It is recommended that students have a computer upon which they can run VMware virtual machines for Linux that will be made available for download and are pre-loaded with activities. UNSW provide licenses for VMware via ICTS.

Recommended Resources

N/A

Additional Costs

N/A

Course Evaluation and Development

One of the key priorities in the 2025 Strategy for UNSW is a drive for academic excellence in education. One of the ways of determining how well UNSW is progressing towards this goal is by listening to our own students. Students will be asked to complete the myExperience survey towards the end of this course.

Students can also provide feedback during the semester via: direct contact with the lecturer, the "On-going Student Feedback" link in Moodle, Student-Staff Liaison Committee meetings in schools, informal feedback conducted by staff, and focus groups. Student opinions make a difference. Refer to the Moodle site for this course to see how the feedback from previous students has contributed to the course development.

Important note: Students are reminded that any feedback provided should be constructive and professional and that they are bound by the Student Code of Conduct Policy

https://www.gs.unsw.edu.au/policy/documents/studentcodepolicy.pdf

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	Seth Enoka		Perth, WA		Email to schedule an appointment.	Yes	Yes

Other Useful Information

Academic Information

Course Evaluation and Development

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Important note: Students are reminded that any feedback provided should be constructive and professional and that they are bound by the Student Code of Conduct.

https://www.gs.unsw.edu.au/policy/documents/studentcodepolicy.pdf

Equitable Learning Services (ELS)

Students living with neurodivergent, physical and/or mental health conditions or caring for someone with these conditions may be eligible for support through the Equitible Learning Services team. Equitable Learning Services is a free and confidential service that provides practical support to ensure your mental or physical health conditions do not adversely affect your studies.

Our team of dedicated **Equitable Learning Facilitators** (ELFs) are here to assist you through this process. We offer a number of services to make your education at UNSW easier and more equitable.

Further information about ELS for currently enrolled students can be found at: https://www.student.unsw.edu.au/equitable-learning

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For more information, please refer to the following:

https://student.unsw.edu.au/plagiarism

Submission of Assessment Tasks

Special Consideration

Special Consideration is the process for assessing and addressing the impact on students of short-term events, that are beyond the control of the student, and that affect performance in a specific assessment task or tasks.

Applications for Special Consideration will be accepted in the following circumstances only:

- Where academic work has been hampered to a substantial degree by illness or other cause;
- The circumstances are unexpected and beyond the student's control;
- The circumstances could not have reasonably been anticipated, avoided or guarded against by the student; and either:

(i) they occurred during a critical study period and was 3 consecutive days or more duration, or a total of 5 days within the critical study period; or

(ii) they prevented the ability to complete, attend or submit an assessment task for a specific date (e.g. final exam, in class test/quiz, in class presentation)

Applications for Special Consideration must be made as soon as practicable after the problem occurs and at the latest within three working days of the assessment or the period covered by the supporting documentation.

By sitting or submitting the assessment task the student is declaring that they are fit to do so and cannot later apply for Special Consideration (UNSW 'fit to sit or submit' requirement).

Sitting, accessing or submitting an assessment task on the scheduled assessment date, after applying for special consideration, renders the special consideration application void.

Find more information about special consideration at: https://www.student.unsw.edu.au/special/consideration/guide

Or apply for special consideration through your MyUNSW portal.

Late Submission of assessment tasks (other than examinations)

UNSW has a standard late submission penalty of:

- 5% per day,
- capped at five days (120 hours) from the assessment deadline, after which a student cannot submit an assessment, and
- no permitted variation.

Students are expected to manage their time to meet deadlines and to request extensions as early as possible before the deadline.

Electronic submission of assessment

Except where the nature of an assessment task precludes its electronic submission, all assessments must be submitted to an electronic repository, approved by UNSW or the Faculty, for archiving and subsequent marking and analysis.

Release of final mark

All marks obtained for assessment items during the session are provisional. The final mark as published by the university following the assessment review group meeting is the only official mark.

School-specific Information

The Leaning Management System

Moodle is the Learning Management System used at UNSW Canberra. All courses have a Moodle site which will become available to students at least one week before the start of semester.

Please find all help and documentation (including Blackboard Collaborate) at the Moodle Support page.

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• Google Chrome 50+
• Safari 10+
Internet Explorer is not recommended. Addons and Toolbars can affect any browser's performance.

Operating systems recommended are:
• Windows 10,
• Mac OSX Sierra,
• iPad IOS10

Further details:
Moodle System Requirements
Moodle Log In

If you need further assistance with Moodle:

For enrolment and login issues please contact:
IT Service Centre
Email: itservicecentre@unsw.edu.au
Phone: (02) 9385-1333
International: +61 2 9385 1333

For all other Moodle issues please contact:
External TELT Support
Email: externalteltsupport@unsw.edu.au
Phone: (02) 9385-3331
International: +61 2 938 53331
Opening hours:
Monday – Friday 7:30am – 9:30 pm
Saturday & Sunday 8:30 am – 4:30pm

Study at UNSW Canberra
Study at UNSW Canberra has lots of useful information regarding:
• Where to get help

• Administrative matters
• Getting your passwords set up
• How to log on to Moodle
• Accessing the Library and other areas.

UNSW Canberra Student Hub

For News and Notices, Student Services and Support, Campus Comminity, Quick Links, Important Dates and Upcoming Events

School Contact Information

Deputy Head of School (Education): Dr Erandi Hene Kankanamge
E: e.henekankanamge@adfa.edu.au
T: 02 5114 5157

Syscom Admin Support: syscom@unsw.edu.au
T: 02 5114 5284
Syscom Admin Office: Building 15, Level 1, Room 101 (open 10am to 3pm, Mon to Fri)