FIT 5003 Software Security

Unit Information

Lecture Week 1

Online Via Zoom

Teaching Team

Dr Xiaoning Du (Chief Examiner & Lecturer)
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Lectures- Tutorials/Labs

Lectures:

- 2h Lecture each Monday 9 am – Livestreamed through Zoom
- You can ask questions during the Lecture:
    - By raising hand (via Zoom) during the lecture
    - Via Zoom chat box (will be answered with some delay)
    - On the relevant Ed channel for each lecture (will be answered after each lecture)

Laboratory Exercises

- Four sessions on campus. Each lasts 2 hours.
- Hands-on learning of lecture materials.
- Start from week 1. Tutorials will be one week behind lectures.

01_OnCampus	Tue (8 am - 10 am)	Jiawei Wang, Jian Gu
02_OnCampus	Tue (10 am - 12 pm)	Jiawei Wang, Henry Huang
03_OnCampus	Mon (2 pm - 4 pm)	Jiawei Wang, Aayush Gupta
04_OnCampus	Tue (4 pm – 6 pm)	Aayush Gupta, Pei Liu

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Student workload:

- 4 hours Lectures & Lab classes each week
- 8 hours of personal study to satisfy the reading and assessment expectations

Feedback

Consultation:

- 2-4 consultation sessions per week
- Starts from week 1 (changes will be announced on Ed).
- Good for individual feedback to each student

Clayton Campus (In-semester Consultations):

Week	Consultation Date & Time	Venue/Link
Week 1-12	Tue 1pm - 2pm	G20, 14 rainforest walk
Week 1-12	Fri 1pm - 2pm	G20, 14 rainforest walk

Feedback

Consultation:

- 2-4 consultation sessions per week
- Starts from week 1 (changes will be announced on Ed).
- Good for individual feedback to each student

Ed forum:

- Use Ed threads to ask questions
  - The teaching team will respond as soon as possible
  - Other students can help ☺ (endorsed for correct answers)
- Questions on the Lecture can also be asked on Ed.

Laboratory time:

- Be prepared before the lab
- Get feedback on each lab activities

Discuss with tutors and the lecturer…. We are here to help you!!

Assessments

Assessment tasks	Value	Due date
Assignment 1: C code vulnerabilities and countermeasures. Java Security	30%	Week 8
Assignment 2: Web Application Security	20%	Week 12
Scheduled Final Assessment	50%	eAssessment Exam: Closed Books, 2h and 10 min

- Late submission penalty: 10% deduction per day from total grade including weekends
- Extension: special consideration form with supporting documents (*Granting or not **any** Special Consideration is decided by the Faculty NOT by the teaching team*)
- You must not use generative artificial intelligence (AI) to generate any materials or content in relation to the in-semester assessment tasks.

Minimum requirement for a pass:

- 50% of the total marks
- 45% in the Scheduled Final Assessment
- 45% in the sum of all in-semester assessment components

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Unit Planning

Week	Lecture S2 2023	Tutorials/Labs S2 2023	Lab Title
1	Introduction to Software Security/Secure SDL	Lab 0	Intro and setup
2	C vulnerabilities (BOF and countermeasure)	Lab 1	Threat Analysis
3	C vulnerabilities (format string vulnerabilities and various other attacks)	Lab 2	Buffer Overflow vulnerability
4	Java Security	Lab 3	Format string vulnerability
5	Secure coding practices	Lab 4	Java coding intro and cryptography
6	Security Countermeasure – The static approach	Lab 5	Java reflection
7	Security Countermeasure – The dynamic approach	Lab 6	Static analysis tools
8	Web Security I	Lab 7	Fuzzing *(Assignment 1 due)*
9	Web Security II	Lab 8	SQL injection web attacks
10	Distributed applications using Blockchain technology	Lab 9	XSS and web-based attacks
11	Guest lecture on trendy security topics	Lab 10	
12	Security In a Nutshell	Lab 11	Sample/Mock Exam *(Assignment 2 due)*

Prerequisite knowledge: Programming experience in C or C++ and Java

Javascript and SQL will be used in this course as well

Schedule is subject to change, check Moodle/Ed weekly for updates (e.g., announcements)

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Books for Further Reading

1. G McGraw, *Software Security*, Addison-Wesley Software Security Series, 2006 (referred to as "McGraw" in reading lists on Moodle). Copy available at the Monash library.

2. M Howard and D LeBlanc, *Writing Secure Code*, Microsoft Press, 2nd Edition, 2003. (referred to as "HowLe" in reading lists on Moodle). Available online via Monash library.

3. J Erickson, *Hacking: The Art of Exploitation*, No Starch Press, 2008. Available online via Monash library. (referred to as "Erick" in reading lists on Moodle).

4. D Stuttard and M Pinto, *The Web Application Hacker's Handbook*, Wiley, 2nd Edition, 2011. Available at Monash library. (referred to as "StuPint" in reading lists on Moodle).

5. Scott Oaks, Java Security: Writing and Deploying Secure Applications, O'Reilly, 2nd Edition, 2013.

6. W Du, Computer Security - A Hands-on Approach, 2017

7. R Anderson. Security engineering. John Wiley & Sons, 2008

Plagiarism

Plagiarism is an unacceptable behaviour. Hence, Monash University treats plagiarism very seriously.
If plagiarism is proofed, students may directly fail the units or even be excluded from Monash University.

Plagiarism is the "wrongful appropriation" and "stealing and publication" of another author's "language, thoughts, ideas, or expressions" and the representation of them as one's own original work.

Academic Integrity check in Monash Uni has become stricter:

- No longer only handled by the Unit’s teaching team
- We are obliged to inform the Faculty!