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446H – Applied Network Security

0. Introduction

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Course web page: https://446h.cybersec.fun

Course aim

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"This course will provide students with the opportunity to deepen their understanding of computer security, and apply the knowledge accumulated by taking other computer science courses to addressing practical network security problems."

- Investigate a security report, research related sources and technologies
- Use and configure software to detect or prevent security breaches and vulnerabilities
- Design and build security prototypes
- Compare the effectiveness of security solutions, asses threats and limitations

Who is this course for?

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- Background (and pre-requisites)
  - MEng: *331 – Network and Web Security*
  - MSc: knowledge of cybersecurity, web security, programming languages, computer networks and operating systems
- Motivation
  - Earn credits and gain hands-on experience by investigating practical security problems
  - Learn more about security during the process
- Attitude
  - Willing to take responsibility of the learning process
  - Commit to attend the lectures
  - Eager to participate in classroom-based discussions about the course topics
  - Ready to present own work to the classroom

What this course is not

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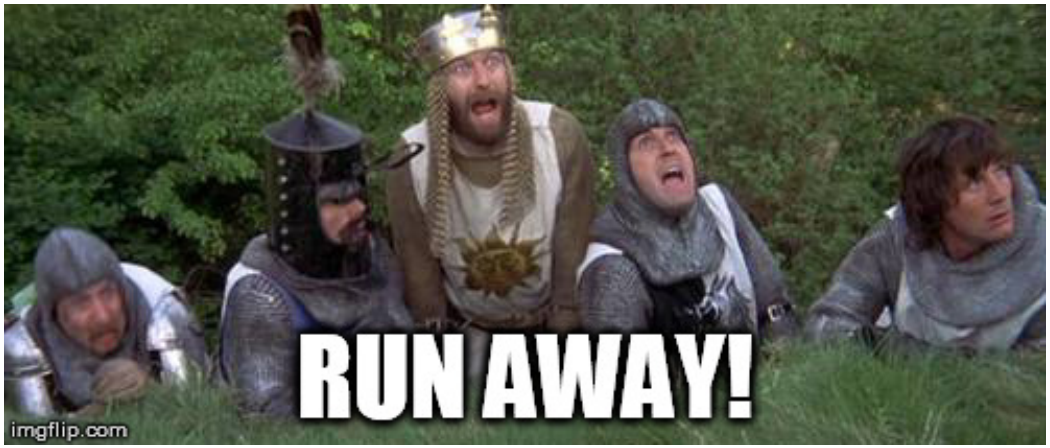
- A lab
  - I will not teach you *how* to program/use a specific tool
  - You should be mature enough to find your own way
- An *Advanced Security* course
  - The main emphasis will not be on the latest/fanciest research ideas on network security
  - Just a bit of that
- A traditional lecture-based course
  - Not much lecturing overall in the course
  - Emphasis is on *learn-by-finding-out-how-to-do-it* (and by realising how hard it is to do it)



Course structure

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- The course is split in 4 independent sections
- Each section covers a different topic
  1. Web application security
  2. Intrusion detection
  3. Forensics and attribution
  4. WiFi security
- Each section is assessed via a project with deadlines respectively in weeks 3,5,7,9
  - Course is completely over before revision week
  - Consider your load, especially if you are taking also *475 - Software Engineering for Industry*

Assessment

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- Course total is out of 100 points
- Individual participation budget (15 points available)
  - 1 point for each session attended in full
  - 7 points for doing your presentation to the classroom (you are not assessed on how well you present)
- Projects
  - Each project gives between 0 and [15,20,25,25] points (respectively for projects [1,2,3,4])
- **446H Bug bounty**
  - 15 extra points if you file a valid CVE or get credited on HackerOne
    - Submission must be between now and end of week 10
    - You need to be credited by the end of May
  - Points are divided among 446H participants credited

Projects

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- In small groups: 3 people by default
- General format:
  - Submit 2-5 pages pdf report
  - Submit zip file with code and/or data, etc
- Assessment
  - 30% Technical achievement (how well does it solve the problem)
  - 10% Evaluation (quality of your objective evaluation of technical achievement)
  - 15% Originality (evidence of having researched the problem independently)
  - 15% Sophistication (evidence of having used your computer science background knowledge non-trivially)
  - 30% Effectiveness of the report in conveying the points above
- Feedback
  - I will provide general feedback during the course
  - You will not get a mark until June

Tentative plan

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fuzzy line

	1:59PM	2PM	3PM
18/1		Intro to course Intro to P1	
25/1	Deadline P1	Presentations of P1	Intro to P2
1/2		Lecture on topic 2	Individual feedback on P1, individual questions on P2
8/2	Deadline P2	Presentations of P2	Intro to P3
15/2		Lecture on topic 3	Individual feedback on P2, individual questions on P3
22/2	Deadline P3	Presentations of P3	Intro to P4
1/3		Lecture on topic 4	Individual feedback on P3, individual questions on P4
8/3	Deadline P4	Presentations of P4	

Admin

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- Timetable: Fri 2pm-4pm (Hux 308)
- Office hours: Thursday 5:30pm-7pm (Hux 441)
- Guest lecturer on forensics: **Erisa Karafili**
- No tutorial helpers, not recorded on Panopto
- Web page: https://446h.cybersec.fun
  - Announcements, schedule, links, reading material…
- Piazza page: https://piazza.com/imperial.ac.uk/spring2019/446h
  - All course-related questions and enquiries should go here
  - You can ask private questions if needed
  - Please share with entire class if it is of general interest
- Feedback
  - Please provide constructive feedback on any aspect of the course
  - Format, choice of topics, difficulty of projects, organisation, suggestions for improvement