

School of Informatics Teaching Course Proposal Form

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Proposal

Course Name: Usable Security and Privacy
Proposer's Name: Kami Vaniae
Email Address: kvaniea@inf.ed.ac.uk
Course Year: 4
Names of any courses that this new course replaces :
None

Course Outline

Course Level: 11
Course Points: 10
Subject area: Informatics
Programme Collections:
Computer Science, Software Engineering, Cognitive Science.

Teaching / Assessment

Number of Lectures: 18
Number of Tutorials / Lab Sessions: 0
Identified Pre-requisite Courses: A Human-Computer Interaction course OR a Security course (6 current classes would fit these requirements, and for MSc most universities have courses in one of these areas.)
Identified Co-requisite Courses: None
Identified Prohibited Combinations: None

Assessment Weightings:

Written Examination: 60%
Assessed Coursework: 40%
Oral Presentations: 0%

Description of Nature of Assessment:

Two courseworks will assess students ability to design and evaluate usable security solutions in different security domains. Students will be expected to form groups, conduct a study, and then individually prepare reports describing the study reasoning and analyzing the results. Depending on class mix, students with HCI and security backgrounds will be encouraged to form groups together for study planning, but all write-ups will be individual.

The written examination will be the standard 2/3 questions used by Inforamtics. Examination question structure will be loosely based on the current HCI structure where students are presented with a problem and asked to draw an interface that solves it, analyze an existing interface, or plan an evaluation that will test the effectiveness of the interface in its context of use. Though, obviously, the questions will also require an understanding of the security and privacy contexts in which the interfaces would be used.

Course Details

Brief Course Description:

The course will cover the topic of human factors of computer security and privacy. Humans are a vital component of security and privacy systems, they are also one of the most expensive components and the most challenging to reason about. In this course, students will learn about how to create systems that are usable while still fulfilling their primary security or privacy mission. Students will also learn about research topics such as designing user studies to critically evaluate interfaces and reading academic papers to create an academically-informed view of a topic.

Anticipated topics include:

- * Study design
- * Privacy
- * Warning design
- * Phishing
- * Authentication mechanisms
- * Public/Private key management and email security
- * Device pairing
- * Data usage and privacy policies
- * Mobile Security and privacy including location and permissions
- * Usability for developers and system administrators

Students are expected to have previously taken a Human-Computer Interaction course OR a Computer Security course. The lecturer will be providing supplementary videos on both topics which cover the subset of HCI and Computer Security material needed to understand the course. The course workload anticipates that students will only have to watch the subset of videos they have not seen previously and that most students will have only taken HCI or CS before, but not both.

Detailed list of Learning Objectives:

- 1: Basic understanding of key topics in Security, Privacy, and Human-Computer Interaction.
- 2: Be able to define what privacy and security mean in different contexts (harder than it sounds).
- 3: Critically evaluate the literature and develop an academically-informed view of different proposed security and privacy solutions from a human factors angle.
- 4: Apply techniques and design approaches to security and privacy problems to create usable solutions.
- 5: Design studies to rigorously evaluate the usability of a security or privacy tool.

Syllabus Information:

Syllabus and readings loosely based on a prior class I taught on privacy: <http://vaniea.com/teaching/privacyToday/index.html>

Recommended Reading List:

Required readings will be from open access papers. [1] and [2] are textbook summarization of those papers and is therefore highly recommended. [3] and [4] are the textbooks for Computer Security and HCI and are recommended for students who need more background in those subjects.

- 1: Usable Security: History, Themes, and Challenges by Simson Garfinkel, Heather Richter Lipford
- 2: Security and Usability: Designing Secure Systems that People Can Use by Lorrie Cranor and Simson Garfinkel
- 3: Introduction to Computer Security Goodrich et al.
- 4: Human-Computer Interaction by Dix, Finlay, Abowd and Reale

Any additional case for support information:

The course would be a specialized option for anyone interested in HCI or Cyber Security/Privacy. It would grow our offering in the Security/Privacy area and assist us in creating an MSc in that area as well as possibly getting NCSC accreditation for our MSc program. It would also extend the offerings in

Human-Computer Interaction which is a growing area in the school. It would also add a privacy course to our offering which is currently missing and possibly of great interest to Data Science students. Finally, it would provide a lighter introduction to both topics for students who either do not have the hacking skills needed for CS or consider HCI to be too design focused.