

Erasmus Exchange ETH Zürich, Switzerland

Diel Caroes 20/02/15

Course: System Security

Responsible: Prof. Srdjan Capkun, Prof. Adrian Perrig

This was most certainly one of the most interesting courses I followed. The course starts on how to break cryptographic algorithms like RSA and AES using side channel attacks. These are attacks based on analysis of power, time etc. Then an indepth study of the state of the art concerning runtime (buffer overflow; ROP) attacks follows which gives lots of insight in today's system security. Finally the course ends with an overview of security of Linux, Windows, Android.

For this course you have to do a weekly assignment which will take you some time. However the assignments are really interesting and are about topics as disassembly of C code, return-oriented programming, forensics, exploit tools, etc. Although they are a lot of work, they are really interesting and fun. No real prior knowledge is needed.

Course: Network Security

Responsible: Prof. Bernhard Plattner, Dr. Thomas Dübendorfer, Dr. Stefan Frei, Prof. Adrian Perrig.

This course concerns security of network. It covers topics as ARP spoofing, MAC spoofing, DNS, TCP, SQL Injections, XSS Injections, SPAM etc. Personally I found this a really interesting course. The labs require you to do exercises about topics covered in the lectures. A lot of topics are covered and this is a really big course. However it is really worth your time and you have all the required prior knowledge if you have followed the 'Teleinformatics course on the VUB'.

Course: Security Of Wireless Networks

Responsible: Prof. Srdjan Capkun

This course covers everything about Wireless networks like WEP, WPA2, device pairing, antennas, GPS, jamming singals etc. In the labs you break WEP and play with SDR's to spoof GPS signals, etc. The most fun part was to build your own directional antenna for Wifi 2.4Ghz. It enables you to receive signals to up to several hundred meters. Personally I would really recommend this course. The exam is at the end of the semester but is fair and reasonable.

Course: Wireless and mobile computing for entertainment applications

Responsible: Stefan Mangold

This course covers everything about wireless communications going from Wifi (simulations), to visible light communication (communication using LEDs), to communication of data embedded in music etc. It requires you to do several big assignments which are a lot of work but they are really interesting and you also have the opportunity to visit Disney Research Lab and see some of their latest research artefacts. Personally I would recommend taking this course because it is interesting and there is no exam in the end.

Course: Smart Energy

Responsible: Prof. Dr. Friedemann Mattern, Verena Tiefenbeck

This course covers everything about energy and electricity production, consumption and how to improve efficiency using the smart grid. If these topics interest you it is a nice course. I would label this is a 'lighter' course.

Course: Security Engineering

Responsible: Prof. David Basin

This course requires you to have some prior knowledge about software engineering and information security. Although in the end the information security requirement is not that important. In the lectures a lot of theory is seen following the different parts of the waterfall model. This goes from design / modeling to implementation and testing. Always taking into account the security related information. The exercises address several concepts. Personally I would not recommend taking this course as it requires you to do a lot of work and the written exam is at the end of the semester, moreover the exam is not really fair in my opinion as it only covers the exercise part.

In general

Although ETH is one of the top universities I never felt that I missed any background knowledge and could easily follow the courses. However, one has to work way harder for the credits compared to the VUB. Concerning the exchange itself: there are a lot of international students over there so you never have the feeling that you are an outsider. The exchange office helps out with all questions and problems. Housing can be a problem in Zürich, you should start to look early and not limit yourself to the inner city as the public transport is excellent.