

Foundations of Cybersecurity

Michele La Manna

Dept. of Ingegneria dell'Informazione

University of Pisa

michele.lamanna@phd.unipi.it

Version: 2022-02-28

Lecturers

- Lecturer
 - Prof. Gianluca Dini
 - Dept. of Ingegneria dell'Informazione
 - Email: gianluca.dini@unipi.it
 - Office hours by appointment
- Teaching assistant
 - Ing. Michele La Manna
 - Dept. of Ingegneria dell'Informazione
 - Email: michele.lamanna@phd.unipi.it





UNIVERSITÀ DI PISA

About Us... TEACUP

The **T**eam for **E**ngineering **A**nd **C**ybersecurity at **U**niversity of **P**isa (TEACUP) is a group of researchers with the passion of Cybersecurity aspects.

The group is also involved in many regional, national, and international research project.

In our [website](#) you can also find BSc and MSc thesis proposals, if you are interested in working with us.





UNIVERSITÀ DI PISA

Prerequisites

- Computer architectures
- Operating systems
- Computer networks
- Algorithms and data structures
- Complexity and probability theory
- Modular arithmetic



Contents

- Applied cryptography
 - Learn how crypto-primitives work
 - Learn how to use them correctly and reason on security
 - Learn what “secure” means
 - Relationship between cryptography and data security
- Programming secure applications
 - Buffer overflow and secure coding in C/C++
 - Web security
- Handson and challenges
- Case studies
 - How to build insecure systems with secure components



Organization

- Foundations of Cybersecurity is a course of the Master in Computer Engineering (CE)
 - 9 CFU, 90 hours
- FoC is shared with the Master in Artificial Intelligence and Data Engineering (AIDE)
- FoC is also mutuanted by Applied Cryptography of the Master in Cybersecurity (CySec)
 - 9 CFU, 90 hours

Timetable

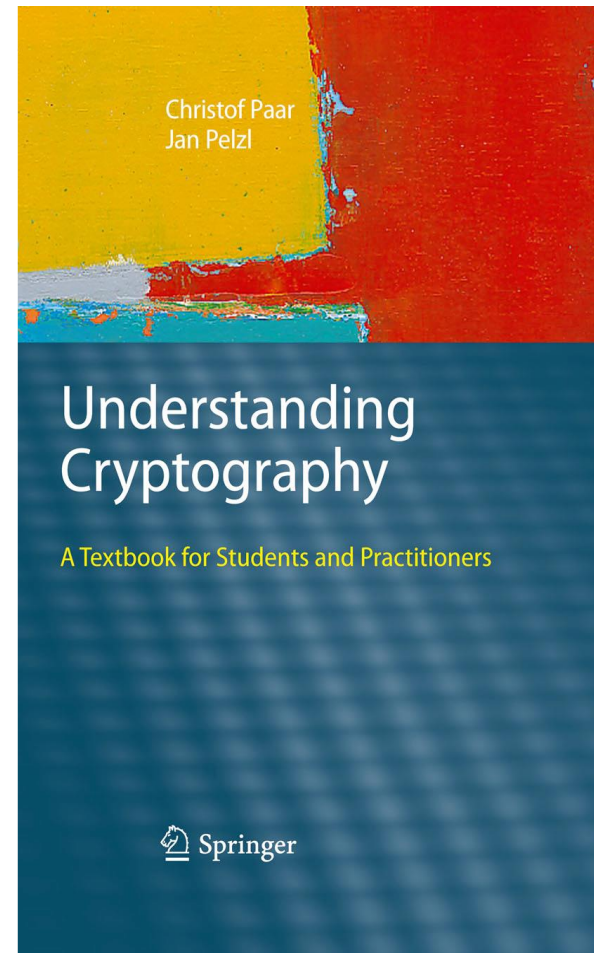


UNIVERSITÀ DI PISA

Time table	Activity	Total #hours
Mon 13:30 – 16:30	• Teaching	60
Thu 10:30 – 12:30		
Wed, 10:30 – 13:30	• Hands-on Lab	36

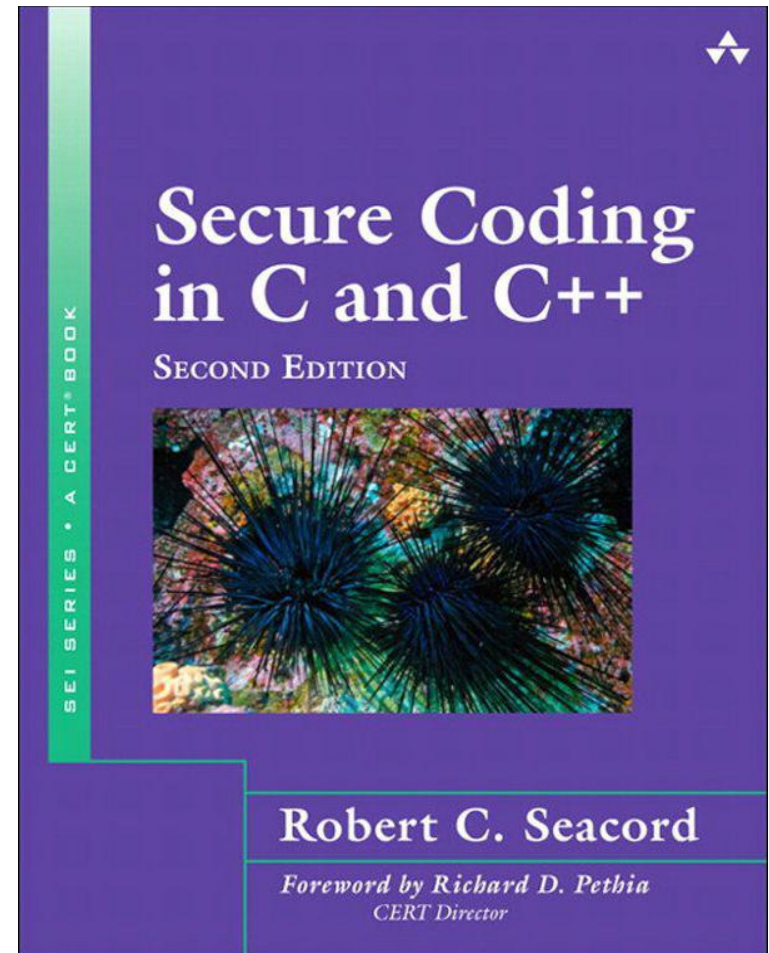
Textbooks

- C.Paar, J.Pelzl.
Understanding
Cryptography –
Testbook for
Students and
Pratictioners.
Springer



Textbooks

- Robert C. Seacord.
Secure Coding in C
and C++ - second
edition. Addison-
Wesley





UNIVERSITÀ DI PISA

Textbooks

- Handouts
- Reader
 - Papers
 - Standards
 - ...
- Microsoft Team 880II 21/22 – Foundations of Cybersecurity
 - Generale/File

Final Exam



UNIVERSITÀ DI PISA

- Project
 - 1-3 people per group
 - *Conditio sine qua non*
- Written-part
 - Closed-book, closed-notes
- Oral-part

Communications



UNIVERSITÀ DI PISA

- Microsoft Team 880II 21/22 – Foundations of Cybersecurity
 - General/Post
- Microsoft Teams chat
- Email (filter safe)
 - Subject: [FoC] <the subject>

One Last thing!

A survey about attendance segmentation:

<https://forms.office.com/r/2cxutz8cNr>

