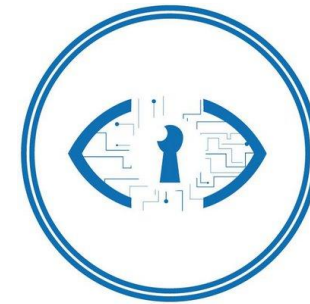




Instituto Politécnico Nacional
"La Técnica al Servicio de la Patria"



Laboratorio de
Ciberseguridad

Centro de Investigación en Computación(CIC)
Instituto Politécnico Nacional - México.

Mobile Security A-15

Dr. Ponciano Jorge Escamilla Ambrosio
pescamilla@cic.ipn.mx
<http://www.cic.ipn.mx/~pescamilla/>



Mobile Security Course A-15

□ Instructor

- Dr. Ponciano Jorge Escamilla Ambrosio
- pescamilla@cic.ipn.mx
- <http://www.cic.ipn.mx/~pescamilla/>

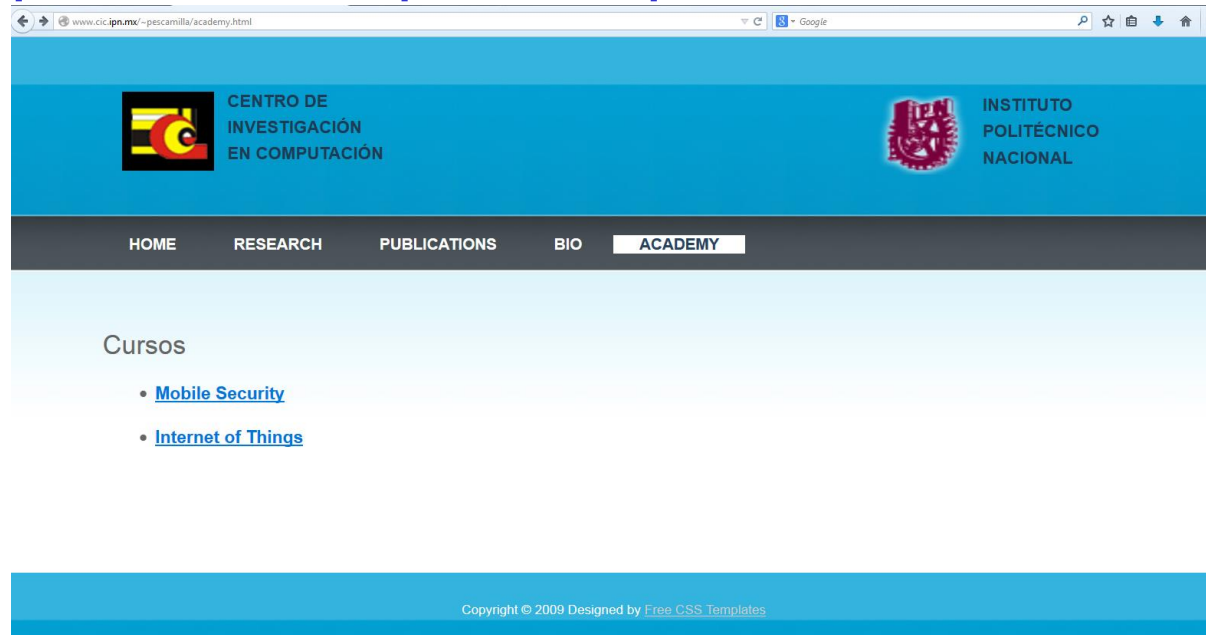
□ Class meetings

- Mondays and Wednesdays 8:00 – 10:00 hrs.
- Classroom A3

Course web site

□ Course web site:

➤ <http://www.cic.ipn.mx/~pescamilla/academy.html>

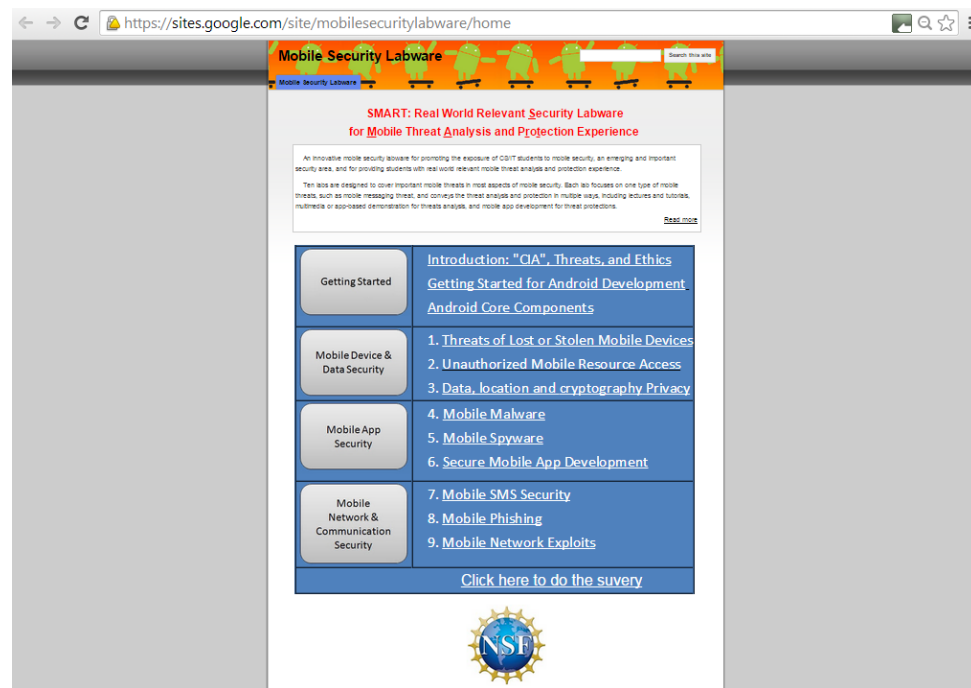


➤ Papers and reading material to be provided

Course Lab

❑ Mobile Security Labware

<https://sites.google.com/site/mobilesecuritylabware/home>



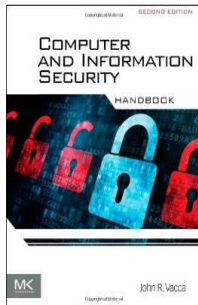
Course Objective

- ❑ At the end of the course the student will have a comprehensive understanding of the main information and network security aspects that arise in mobile communication systems, including smartphones and mobile telecommunication systems, wireless sensor networks, the internet of things and safety-critical devices.

Course content

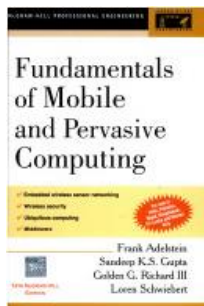
1. Introduction to mobile security
2. Telecom security
3. Smartphone security
4. Mobile Internet security
5. Mobile local privacy
6. Wireless sensor networks security
7. Internet of things security
8. Security in safety-critical devices

Course text books



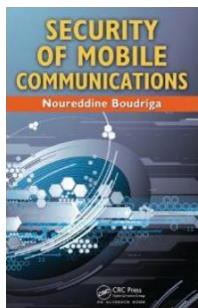
John R. Vacca, Computer and Information Security Handbook, 2nd Edition, Morgan Kaufmann, 2013.

<http://www.sciencedirect.com/science/book/9780123943972#ancp1>



Frank Adelstein, Sandeep K.S. Gupta, Golden G. Richard III, and Loren Schwiebert, Fundamentals of Mobile and Pervasive Computing, McGraw-Hill, 2005.

<http://www.mhprofessional.com/product.php?isbn=0071782583>



Nouredine Boudriga, Security of Mobile Communications, CRC Press, 2010.

<http://www.crcpress.com/product/isbn/9780849379413>

Course text books

SECURITY AND COOPERATION IN WIRELESS NETWORKS
Thinking Malicious and Sensitive Behavior
in the Age of Ubiquitous Computing
A GRADUATE TEXTBOOK

Levente Buttyán and Jean-Pierre Hubaux

ISBN 9780521875223

DRAFT

Version 1.5.1

July 10, 2007

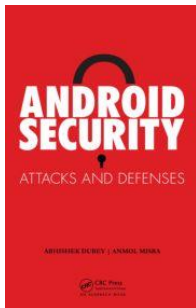
This version has been developed in parallel with the copyrighting process. The
address between the version 1.5.1 and the previous 1.4 version is mostly
minor corrections, all of very recent origin.

The copyright on this book is held by Cambridge University Press, who have
kindly agreed to allow us to keep the book available on the Web until it is
published. After publication, the whole book will be made available for a fee
for print production.

<http://secowinet.epfl.ch>

Levente Buttyán and Jean-Pierre Hubaux, Security and Cooperation in Wireless Networks, Cambridge University Press, 2007

<http://secowinet.epfl.ch/fulltext/SeCoWiNetV1.5.1.pdf>



Abhishek Dubey and Anmol Misra, Android Security: Attacks and Defenses, CRC Press, 2013.

<http://www.crcpress.com/product/isbn/9781439896464>

<http://freedownloadpdf.tk/android-security-attacks-and-defenses/>

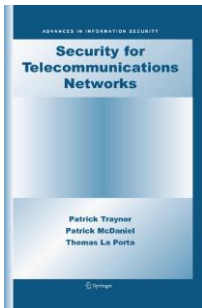


Himanshu Dwivedi, Chris Clark, and David Thiel, Mobile Application Security, McGraw-Hill, 2010.

<http://www.mhprofessional.com/product.php?isbn=007163357X>

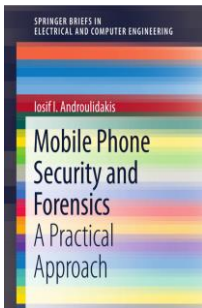


Course text books



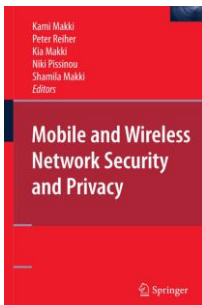
Patrick Traynor, Patrick McDaniel, and Thomas La Porta, Security for Telecommunications Networks, Springer, 2008.

<http://link.springer.com/book/10.1007/978-0-387-72442-3>



Iosif I. Androulidakis, Mobile phones security and forensics: A practical approach, Springer, 2012.

<http://link.springer.com/book/10.1007/978-1-4614-1650-0>



Kami Makki, Peter Reiher, Kia Makki, Niki Pissinou, and Shamila Makki, Mobile and wireless networks security and privacy, Springer, 2007.

<http://link.springer.com/book/10.1007/978-0-387-71058-7>

Grading

- ❑ Midterm exam 20%
- ❑ Final exam 20%
- ❑ Homework and Labs 30%
- ❑ Final Project 30%

Course Schedule A-15

<http://www.cic.ipn.mx/~pescamilla/academy.html>

Mobile Security Course Schedule A-15

DATE	TOPIC	READING
Jan 26	Course Introduction & Logistics [Slides]	[Hanson and McNamee, 2000]
Jan 28	Smartphones, Mobile Device Components [Slides]	[Shiraz et al, 2013] , [ARM and Qualcomm, 2014]
Feb 2	NO CLASS, Constitution Day	-
Feb 4	Mobile devices security challenges	[Saidi and Gehani, 2013] , [Wang et al, 2014] , [La Polla et al, 2013]
Feb 9	Telecom Security, General telecom vulnerabilities	[Liu et al, 2013] , [Traynor et al, 2008 CH4] , [Leeuwen et al, 2013]
Feb 11	Basic telecom system security	[Beekman and Thompson, 2013] , [Perez and Pico, 2011]
Feb 16	Telecom security from 1G to 4G	[Cao et al, 2014]
Feb 18	NO CLASS - Collaboration project, to be confirmed	
Feb 23	NO CLASS - Collaboration project, to be confirmed	-
Feb 25	Smartphone security, Mobile operating systems	[Zhou and Jiang, 2012] , [Lalande and Wendzel, 2013]
Mar 2	OS security models	[Wang et al, 2013] , [Rastogi et al, 2013]
Mar 4	OS security models	[Davi et al, 2010] , [Suarez-Tanquil et al, 2014]
Mar 9	NO CLASS - Collaboration project, to be confirmed	-
Mar 11	Best practices for security and privacy in mobile app development	[Harris, 2013] , [Zhu et al, 2013] , [Hasan et al, 2013]

First readings

- ❑ Michael J. Hanson and Dylan J. McNamee, Efficient reading of papers in science and technology, 2006

Efficient Reading of Papers in Science and Technology

This brochure provides an approach to help you read scientific papers efficiently and effectively.

- ❑ Slides based on Mobile Security Course, Patrick Tague, Carnegie Mellon University

<http://wnss.sv.cmu.edu/courses/14829/f14/schedule.php>

Mobile Security Introduction

What is Mobile Security?

- Security in mobile OSs and networks
- Computers, telecom, radio communications
- Mobile app security
- Data encryption for mobile/wireless
- All other security properties relevant to wireless/mobile
- BYOD
- User privacy
- Physical device security
- Sniffing NFC communication
- Attacks on cellular/mobile networks and x-measures
- Mobile malware
- Network correctness
- Resilient wireless (anti-jamming)
- Data storage on/off devices
- GPS / location services; sensors
- Contacts; context information
- Advertising

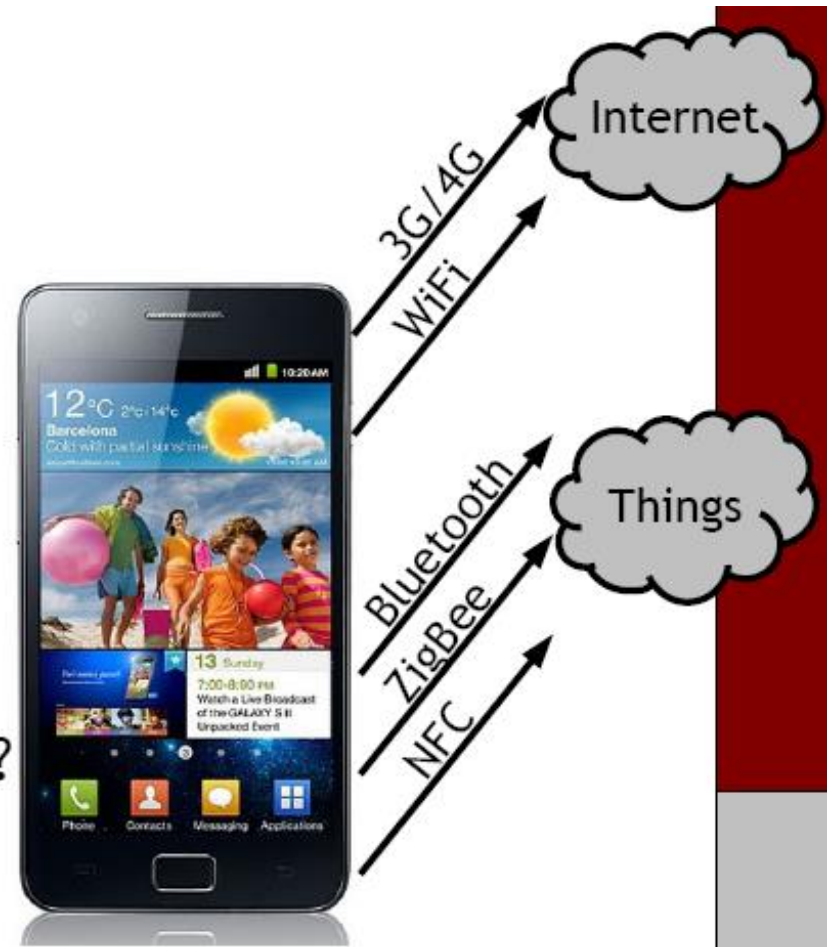
Focus on the Smartphone



- In the Mobile Security course, we'll study:
 - Smartphone systems
 - Apps, services, etc.
 - Networks they use
 - External services they rely on
 - Security/privacy issues faced by users, devs, regulators, ...
 - Maybe some usability issues

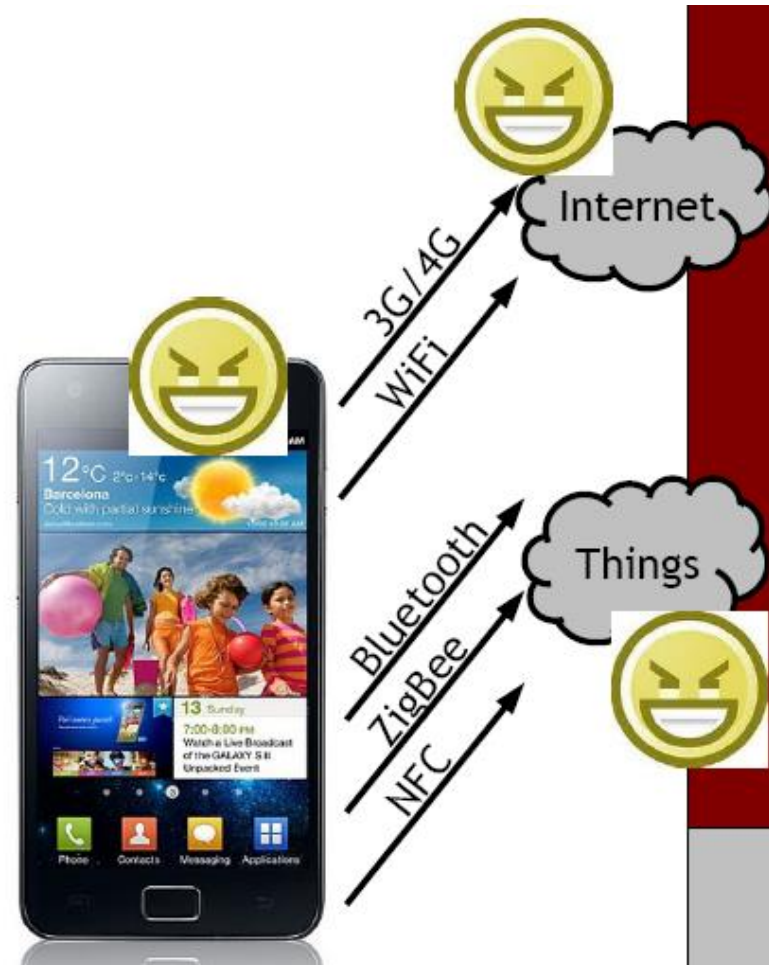
Course objectives

- “Security & Privacy for Mobile System & App Developers”
- Exploration and critical analysis of security and privacy issues in mobile systems
 - What are the security concerns in mobile devices?
 - What will the concerns be in *N* years?

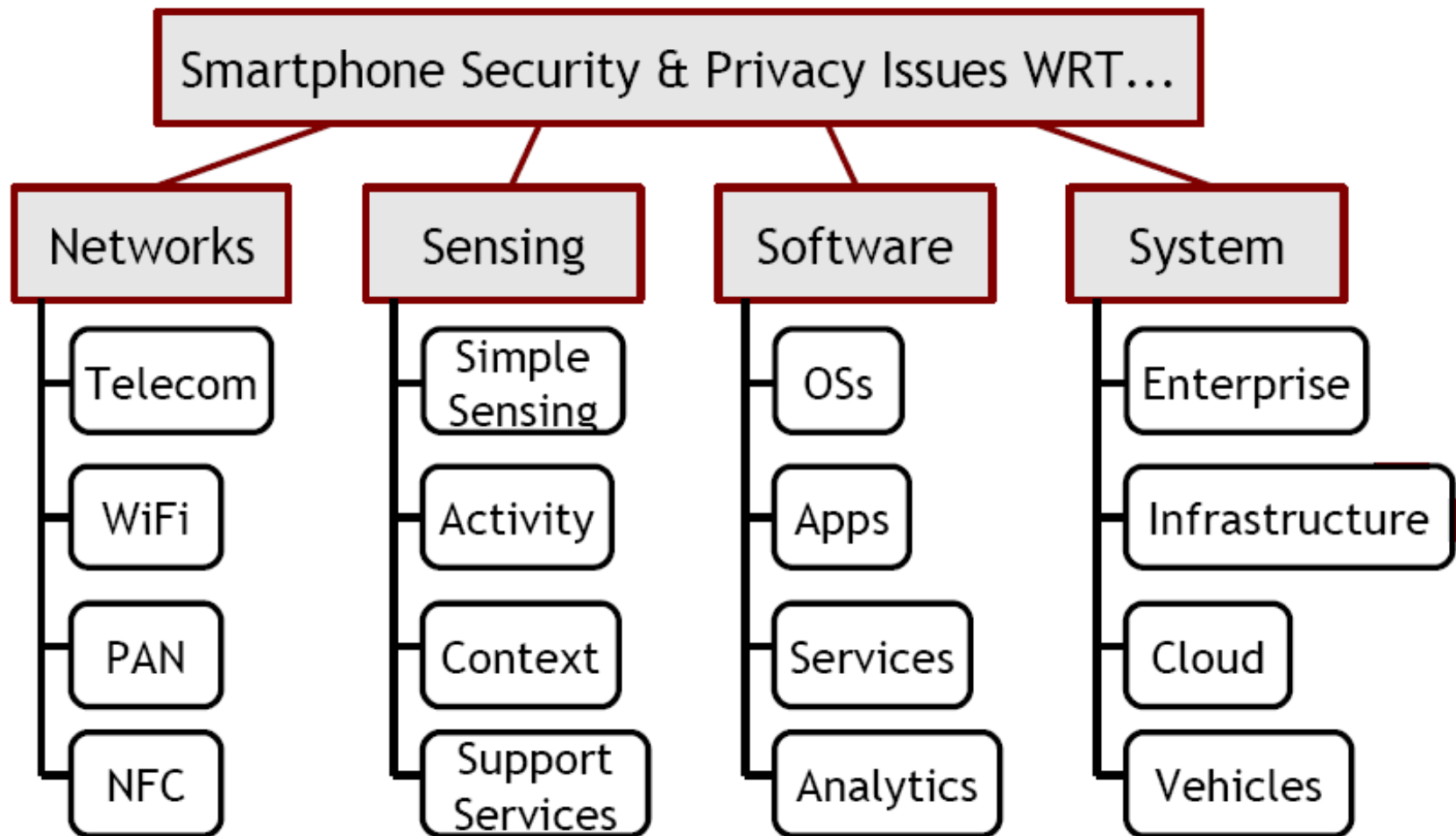


Course objectives

- Topics include:
 - Mobile network security & vulnerabilities
 - Mobile app & web security
 - Secure network services
 - Mobile location privacy
 - Emerging threats and challenges
 - ...



Topic Roadmap



Labware Introduction

❑ <https://sites.google.com/site/mobilesecuritylabware/home>



Paper report template

INSTITUTO POLITÉCNICO NACIONAL
CENTRO DE INVESTIGACION EN COMPUTACION



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CIC

Centro de Investigación en Computación



Laboratorio de
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Instituto Politécnico Nacional - México.

Paper Title

Author paper:

Presenter:

Course: Mobile Security A-15

Instructor: Dr. Ponciano Jorge Escamilla Ambrosio

