TELECOM Sancu Ingénieurs du numérique • Inspiring your digital future

> FORMATION INGÉNIEUR SOUS STATUT **ÉTUDIANT** OU APPRENTI 1, 2 OU 3 ANS

INTERNET **SYSTEMS AND SECURITY**

INTERNET, SYSTÈMES CONNECTÉS ET SÉCURITÉ









TELECOM Nancy INTERNET SYSTEMS AND SECURITY

TELECOM Nancy is the School of Engineering in Computer Science of the Lorraine INP Collegium at the University of Lorraine. Member of the Mines-Télécom Institute association, TELECOM Nancy is a public engineering school working at the very heart of IT and digital sciences.



Launch Event of TELECOM Nancy's Professional-Grade Cyber-Range

Over a 3-year period, its goal is to train « digital engineers » and scientists: women and men involved in the future, developing both profession-specific expertise directed towards progress and opportunities, as well as an awareness to and knowledge of the business world. The curriculum integrates a specialized Major on cyber-security.

Recruitment takes places as from BAC + 2, equivalent to 2 years of post A-Level study (main recruitment - enrolment into the 1st year) and BAC + 4, equivalent to a post-graduate degree (enrolment into the 2nd year).

Since 2017, TELECOM Nancy has acquired a top-level cyber-security technological platform, composed of three main rooms (red team, blue team, datacenter) complemented by a professional-grade cyber-range, and interconnected to other cutting-edge platforms (healthcare, industry, transportation...).

forensics

regulations

> standards

firewalls detection

misconfigurations

threats •

denial-of-service

pentesting

reverse engineering

VITUSES engineering

A 3-YEAR ACADEMIC PROGRAM

The academic program can be followed under the student or apprentice status (1, 2 or 3 years of apprenticeship):

- 3 semesters of general curriculum including fundamental sciences, technology, economic, social and human sciences as well as foreign languages.
- 3 semesters in a specialized Major.

Training conducted by world-class scientists data leakage exposure and professors from major research cryptography Malwares vulnerabilities laboratories (LORIA, INRIA, CRAN, IECL, CNRS, High Security Laboratory) and by many professionals working in Computer Science and Cyber-Security (network security, malware, cryptography, protocol verification, secure coding...).

The curriculum includes a general course on cybersecurity and best practices followed by all the students of TELECOM Nancy.

5 MAJORS STARTING IN THE 2ND YEAR

- Big Data Engineering and Applications
- **Enterprise Information** Systems
- **INTERNET SYSTEMS** AND SECURITY
- Software for Embedded Systems
- Software Engineering

OUTLINE: INTERNET SYSTEMS AND SECURITY

Backbone of communications amongst objects, humans, companies, and administrations, the Internet is a great integration platform capable of efficiently interconnecting billions of entities, from RFID chips to data centers but also increases the exposure to security threats.

This specialized major on cyber-security aims at designing, maintaining and protecting elaborated services built over this integration platform.

Mastering the Internet and its services, composed of heterogeneous and constantly evolving connected systems, with strong performance and security requirements, is an essential skill for companies and organizations.

It constitutes a major leverage for their competitiveness and growth, through the design and maintenance of value-added services that are protected and resilient against a wide range of security attacks.

PROGRAM OBJECTIVES

INTERNET SYSTEMS AND SECURITY

To strenghten theoretical knowledge:

- Software design and defensive programming
- Cryptography and data protection
- Modeling and verification of security protocols
- Resilience and scalability of systems
- · Security methodologies and regulations

To acquire advanced technological skills:

- · Internet, network protocols and services
- Analysis of attacks, ethical hacking, and pentesting
- Protection and defenses of networks and applications
- Distributed systems, cloud computing, and internet-of-things
- · Malwares, viruses and reverse engineering
- Monitoring, orchestration and security management
- · Forensics and responses to security incidents

To develop close ties with companies:

- Courses given by **international leading experts** from industry and services (digital forensics, security management, secure software programming...)
- Practical use cases experimented over our cyber-security technological platform, including a **professional-grade cyber-range**

CAREERS

- Security Architect / Integrator / Designer
- Analyst / Consultant in Cyber-Security
- Security Auditor, Expert in Pentesting
- Expert in Digital Forensics
- Chief Information Security Officer
- Research Engineer in Cyber-Security

EXAMPLES

- As Cédric, become a security analyst in the Defence and Space division of a major European aerospace group.
- As Rita, join the cyber-security teams of the major world specialist of smart card manufacturing.
- As Maxime, be an expert in penetration testing for international banking and financial institutions.

RECOGNIZED EXCELLENCE IN CYBER-SECURITY

- Student teams in the **top 5 of several national and european cyber-security challenges** (TRACS, GreHack, DGHack, UniBW CTF...)
- Discovery of security vulnerabilities by students on common software products (Facebook Messenger, Oracle MySQL, Suricata IDS, Google Rewards...)
- Organization of **cyber-security events** for specialist and non-specialist audience (cyber escape game, annual CTF, Hackathon, Cyber Humanum Est)



- Coordination and/or participation to several MOOCs in cyber-security (network and service management, network security, becoming a cyber-security consultant)
- Participation to several European competence networks / skills alliances (EU Concordia, Erasmus+ Rewire...), student exchange programs in cybersecurity, strong relationships with the French Ministry of Armed Forces (COMCYBER).
- A strong alumni network in cyber-security, including Renaud Lifchitz, ranked amongst the top 100 most influent french IT experts worldwide.





Co-funded by the Erasmus+ Programme of the European Union







SPECIFIC INTERNET SYSTEMS AND SECURITY MAJOR COURSES IN 2ND AND 3RD YEAR AT TELECOM NANCY

2ND YEAR

- Cryptography et Authentification
- Security of Applications and Secure Coding
- Cyber-Security Methods, Regulations and Organization
- Information Theory and Data Resilience
- Introduction to Ethical Hacking
- Advanced Networks and Systems
- Digital Forensics and Responses to Incidents
- Monitoring and Orchestration for the Cyberspace

Starting Nmap 7.60 (https Nmap scan report for 192.1 Host is up (0.00048s laten	://nmap.org) at 2018-04-05 15 68.197.161 cy).	:55 CEST	6
PORT STATE SERVICE 80/tcp open http			6-
Nmap scan report for 192.1 Host is up (0.00087s laten	68.197.183 (cy).		0
PORT STATE SERVICE 80/tcp open http	1	-	
Neap scan reps 192.1 Host is up (0.	06.197.212 (cy).		3
BO/tcp open http or	455. 791 896. 991		
Host is up (0.069s latency	n:	L R	1

3RD YEAR

- Advanced Cryptography
- Malware and Reverse Engineering
- Security of Networks and Services
- Security Protocols and Verification
- Applied Penetration Testing
- Management of Cyber-Security
- Mobile Applications and Internet-of-Things
- Cloud Computing: Opportunities and Risks
- Big Data for Cyber-Security



www.telecomnancy.eu

TELECOM Jancy Ingénieurs du numérique • Inspiring your digital future UNE OFFRE DE FORMATION DE RÉFÉRENCE EN CYBERSÉCURITÉ, UNIQUE DANS LE GRAND EST, SOUS STATUT ÉTUDIANT OU APPRENTI EN 1, 2 OU 3 ANS

cybersecurity@telecomnancy.eu

TELECOM Nancy - 193 avenue Paul Muller - 54600 Villers-lès-Nancy - France - Tél. : +33 (0)3 72 74 59 00 - contact@telecomnancy.eu Follow us on Twitter : @TELECOMNancy - LinkedIn : TELECOM Nancy - Facebook : TELECOM Nancy - Instagram : @telecom_nancy