ESIGELEC
SCHOOL OF ENGINEERING
SMART AND CONNECTED SYSTEMS

June 2022

Visiting professors programme

Master level courses available in 2022/2023

Course title no 1 : **Systems Security Management & Risk Management**

Number of teaching hours and period : 20 hours lecture between October 2022 and December 2022 and/or in February/March 2023.

Course objectives: at the end of this course, the students will be able to:

- Learn the phases of security management according to the ISO quality standard 27032
- Learn the standards and reference systems related to cybersecurity
- Learn the security standards for risk management
- Use the EBIOS method within a given situation or company

Short course content

- Introduction to safety management and methods
- Introduction to security stands and benchmarks
- ISSP: Information System Security Policy
- Risk modelling
- Assessing risks
- Examples of threats

Contact person at ESIGELEC : Dr Vincent Derrien (vincent.derrien@esigelec.fr)

Course title no 2 : **Cryptography**

Number of teaching hours and period : 20 hours lecture in February/March 2023.

Course objectives: at the end of this course, the students will be able to:

- Explain where problems in I.T. security or telecommunications systems come from
- Explain how cryptographic systems work and how they are used to provide security services
- Apply various security techniques incorporating cryptography for a local company network

Short course content

- The origin of network weaknesses which lead to hacker attacks
- The role and characteristics of communication protocols
- An example: Data Link Control (HDLC) Protocol
- The various types of encryption and their limits
- Identification methods in a network
- 3-layer network security: IPsec protocol and TLS (Transport Layer Security)
- Access control for services

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Course title no 3 :MPLS and High-Speed Networks

Number of teaching hours and period : 16 hours lecture+4 hours class in November/December 2022 or in January 2023

Course objectives: at the end of this course, the students will be able to:

- Explain the evolution of digital transport networks
- Put together solutions for WAN architecture (to connect distant sites)
- Use MPLS (Multiprotocol Label Switching) to manage traffic

Short course content

- LAN (Local Area Network) topologies
- Service integrated digital networks
- Frame relay and synchronous digital hierarchy
- Asynchronous transfer techniques (ATM) and quality of service
- MPLS (Multiprotocol Label Switching) and BGP (Border Gateway Protocol)

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Course title no 4 : Initiation to RF Noise measurement

Number of teaching hours and period : 20 hours in October/November 2022.

Course objectives:

- initiate the students (graduate/postgraduate) on RF noise measurement techniques

Short course content :

- Generalities on noise (sources, types, etc.).
- Noise model and noise figure of a quadripole.
- Friis equation. Noise measurement techniques.
- Examples and practice.

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