

# CYBERSECURITY

Cybersecurity is about balancing risks and opportunities in cyberspace, the global interconnection of digital networks. Cybersecurity is designed to protect digital property, personal information, and business transactions from accidents, errors, and deliberate attacks.

➤ **Course duration: 10 contact hours**

➤ **Dates: 10, 11 & 14 July 2023**

■ **Recommended background knowledge for students:**

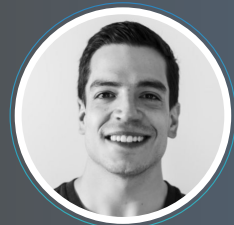
- Background in ICT (Information and Communication Technologies)

Meet Our

## INSTRUCTORS



**Víctor A. Villagrà** is associate professor at the School of Telecommunications Engineering School (ETSIT), UPM, since 1992. His main research areas are Cybersecurity and Network and Service Management and he teaches different undergraduate and postgraduate courses in these areas. He is currently the Director of the MSc in Cybersecurity Master programme at UPM.



**Xavier A. Larriva-Novo** (Member, IEEE) holds a PhD in Telecommunications Engineering and MSc in Cybersecurity from the Universidad Politécnica de Madrid (UPM) and is currently assistant professor and researcher of telematics engineering with UPM. He has been involved in European research projects related to network management, security design in services, network security, machine learning, and high-performance computing as well as different national projects. He is an active IEEE Computational Intelligence Society member.



**Mario Vega Barbas**, PhD in Telecommunications (UPM, Spain) and PhD in Applied Medical Technology (KTH, Sweden), is associate professor at the School of Telecommunications Engineering School (ETSIT), UPM. His main research areas are Information Security, IoT and Data Analytics and he teaches different undergraduate and postgraduate courses in these areas.

## LEARNING GOALS

■ **Gain**

Overview



Cybersecurity areas and objectives

■ **Understand**

Need and Methods



Cybersecurity risk analysis and planning

■ **Identify**

Threats and vulnerabilities



Systems and users

■ **Learn**

Theoretical aspects



Specific business field

## SYLLABUS

### MODULES

01

I Cybersecurity Objectives and Planning  
Why and how? Risk Assessment  
Cybersecurity Policy Design

II Know your enemy  
Human Threats  
Technological Threats

02

I Security Services: Access Control Services  
Authentication  
Perimeter Defense

II Security Services: Network Security  
Security Protocols

03

I Industry Talk

II Question and answer session

Meet Our

## INDUSTRY SPEAKER



**Raúl Riesco Granadino** holds an MS and PhD in Telecommunication Engineering from the Universidad Politécnica de Madrid. He has more than 20 years of professional experience in Information Security and ICT sector. He is CEO of Mandalorian Security, a start-up specialized in Blockchain Security, former Chief Security Officer of Babylon Finance, VP at Telefónica Eleven Paths and Deputy Director at the Spanish National Cybersecurity Institute (INCIBE). Since 2013 he has been actively contributing as an expert / advisor to European Commission in NIS Research and Innovation (H2020).

# 5G: A LOT MORE THAN JUST MOBILE COMMUNICATIONS

5G is the new generation of mobile communications, standardized by 3GPP, which complies with the requirements established by ITU-R for the new generation IMT-2020 of International Mobile Telecommunications. This new technology enhances mobile communication networks, which will be able to offer high-quality services customized to user needs, providing higher data rates, ultra-high reliability, extremely low latencies and ubiquitous massive connectivity, all of them by networks extremely efficient in the use of energy and radio spectrum resources. 5G also opens the path to a number of use cases in many different economic sectors, which can leverage 5G networks to increase their use of ICTs, thus contributing to the digital transformation of the economy and the society.

➤ **Course duration: 10 contact hours**

➤ **Dates: 12 to 14 July 2023**

■ **Background knowledge:**

- Engineering students/graduates. Some knowledge of mobile communications up to 4G would be helpful but is not essential.

Meet Our

## INSTRUCTORS



**José Manuel Riera** is full professor of Radio Communications at UPM. He is currently the leader of the UPM Research Group on Information and Communication Technologies (GTIC), which is part of the Information Processing and Telecommunications Center (IPTC).



**Narciso García** is currently a full professor of Signal Theory and Communications. He leads the Image Processing Group at UPM.



**José I. Alonso** is full professor of the Department of Signals, Systems and Radiocommunications at UPM. He is a member of Information Processing and Telecommunications Center (IPCT).

## LEARNING OUTCOMES

■ **Find out about**

Standardization, deployment and evolution



5 G

■ **Learn about**

Radio access network



5 G

■ **Discover**

Core network and applications



5 G

■ **Explore**

Use Cases



5 G

■ **Understand**

Evolution and prospects



5 G

## SYLLABUS

MODULES

01

- I. Introduction and standardization of 5G
- II. 5G-NR Radio Access Network

02

- I. 5G Core Network. Services and applications
- II. 5G Use Cases (Extended Reality (XR) and High-Speed Railways (HSR))

03

- I. Industry vision



**David Fernández** is associate professor with the Department of Telematics Systems Engineering (DIT), UPM, specializing in software-defined networks, network virtualization, cloud computing datacenters technologies, and network security.



**Luis Bellido** is currently associate professor at UPM, specializing in the fields of computer networking, Internet technologies and quality of service.