



## Teaching Guide

| Teaching Guide           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |        |            |           |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|------------|-----------|
| Identifying Data         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |        |            | 2019/20   |
| Subject (*)              | External Internship                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        | Code       | 614530016 |
| Study programme          | Máster Universitario en Ciberseguridade                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |        |            |           |
| Descriptors              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |        |            |           |
| Cycle                    | Period                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Year   | Type       | Credits   |
| Official Master's Degree | 1st four-month period                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Second | Obligatory | 15        |
| Language                 | SpanishGalician                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |        |            |           |
| Teaching method          | Face-to-face                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |        |            |           |
| Prerequisites            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |        |            |           |
| Department               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |        |            |           |
| Coordinador              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | E-mail |            |           |
| Lecturers                | ,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | E-mail |            |           |
| Web                      | faitic.uvigo.es                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |        |            |           |
| General description      | The mission of the master is to train highly qualified professionals in all technical, organizational, operational and forensic processes related to digital security. The teaching staff belongs to the areas of Telematic Engineering, Signal Theory and Communications, Computer Science and Artificial Intelligence, Systems Engineering and Criminal Law of the two universities, and is complemented by the contribution of leading professionals from companies in the sector in Galicia and their commitment to support student practices. |        |            |           |

## Study programme competences

| Code | Study programme competences                                                                                                                                                                                                                                                                                         |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A1   | CE1 - To know, to understand and to apply the tools of cryptography and cryptanalysis, the tools of integrity, digital identity and the protocols for secure communications                                                                                                                                         |
| A2   | CE2 - Deep knowledge of cyberattack and cyberdefense techniques                                                                                                                                                                                                                                                     |
| A3   | CE3 - Knowledge of the legal and technical standards used in cybersecurity, their implications in systems design, in the use of security tools and in the protection of information                                                                                                                                 |
| A4   | CE4 - To understand and to apply the methods and tools of cybersecurity to protect data and computers, communication networks, databases, computer programs and information services                                                                                                                                |
| A5   | CE5 - To design, deploy and operate a security management information system based on a referenced methodology                                                                                                                                                                                                      |
| A6   | CE6 - To develop and apply forensic research techniques for analysing incidents or cybersecurity threats                                                                                                                                                                                                            |
| A7   | CE7 - To demonstrate ability for doing the security audit of systems, equipment, the risk analysis related to security weaknesses, and for developing de procedures for certification of secure systems                                                                                                             |
| A8   | CE8 - Skills for conceive, design, deploy and operate cybersecurity systems                                                                                                                                                                                                                                         |
| A9   | CE9 - Ability to write clear, concise and motivated projects and work plans in the field of cybersecurity                                                                                                                                                                                                           |
| A10  | CE10 - Knowledge of the mathematical foundations of cryptography. Ability to understand their evolution and future developments                                                                                                                                                                                     |
| A11  | CE11 - Ability to collect and interpret relevant data the field of computer and communications security                                                                                                                                                                                                             |
| A12  | CE12 - Knowledge of the role of cybersecurity in the design of new industrial processes, as well as of the singularities and restrictions to be addressed in order to build a secure industrial infrastructure                                                                                                      |
| A13  | CE13 - Ability for analysing, detecting and eliminating software vulnerabilities and malware capable to exploit those in systems or networks                                                                                                                                                                        |
| A14  | CE14 - Ability to develop a continuity business plan on the guidelines of commonly accepted norms and standards                                                                                                                                                                                                     |
| A15  | CE15 - Ability to identify the value of information for an institution, economic or of other sort; ability to identify the critical procedures in an institution, and the impact due to their disruption; ability to identify the internal and external requirements that guarantee readiness upon security attacks |
| A16  | CE16 - Ability for envisioning and driving the business operations in areas related to cybersecurity, with feasible monetization                                                                                                                                                                                    |
| A17  | CE17 - Ability to plan a time schedule containing the detection periods of incidents or disasters, and their recovery                                                                                                                                                                                               |
| A18  | CE18 - Ability to correctly interpret the information sources in the discipline of criminal law (laws, doctrine, jurisprudence) both at the national and international levels                                                                                                                                       |
| A19  | CE19 - To learn how to identify the best professional profiles for an institution as a functions of its features and activity sector                                                                                                                                                                                |
| A20  | CE20 - Knowledge about the firms specialized in cybersecurity in the region                                                                                                                                                                                                                                         |



|     |                                                                                                                                                                                                                                                                                                                                              |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| B1  | CB1 - To possess and understand the knowledge that provides the foundations and the opportunity to be original in the development and application of ideas, frequently in a research context                                                                                                                                                 |
| B2  | CB2 - Students will be able to apply their knowledge and their problem-solving ability in new or less familiar situations, within a broader context (or in multi-discipline contexts) related to their field of specialization                                                                                                               |
| B3  | CB3 - Students will be able to integrate diverse knowledge areas, and address the complexity of making statements on the basis of information which, notwithstanding incomplete or limited, may include thoughts about the ethical and social responsibilities entailed to the application of their professional capabilities and judgements |
| B4  | CB4 - Students will learn to communicate their conclusions ---and the hypotheses and ultimate reasoning in their support--- to expert and nonexpert audiences in a clear and unambiguous way                                                                                                                                                 |
| B5  | CB5 - Students will apprehend the learning skills enabling them to study in a style that will be selfdriven and autonomous to a large extent                                                                                                                                                                                                 |
| B6  | CG1 - To have skills for analysis and synthesis. To have ability to project, model, calculate and design solutions in the area of information, network or system security in every application area                                                                                                                                          |
| B7  | CG2 - Ability for problem-solving. Ability to solve, using the acquired knowledge, specific problems in the technical field of information, network or system security                                                                                                                                                                       |
| B8  | CG3 - Capacity for critical thinking and critical evaluation of any system designed for protecting information, any information security system, any system for network security or system for secure communication                                                                                                                          |
| B9  | CG4 - Ethical commitment. Ability to design and deploy engineering systems and management systems with ethical and responsible criteria, based on deontological behaviour, in the field of information, network or communications security                                                                                                   |
| B10 | CG5 - Students will have ability to apply theoretical knowledge to practical situations, within the scope of infrastructures, equipment or specific application domains, and designed for precise operating requirements                                                                                                                     |
| B11 | CG6 - Ability to do research. Ability to innovate and contribute to the advance of the principles, the techniques and the processes within their professional domain, designing new algorithms, devices, techniques or models which are useful for the protection public, private or commercial of digital assets                            |
| C1  | CT1 - Ability to apprehend the meaning and implications of the gender perspective in the different areas of knowledge and in the professional exercise, with the aim of attaining a fairer and more egalitarian society                                                                                                                      |
| C2  | CT2 - Ability for oral and written communication in Galician language                                                                                                                                                                                                                                                                        |
| C3  | CT3 - Ability to include sustainability principles and environmental concerns in the professional practice. To integrate into projects the principle of efficient, responsible and equitable use of resources                                                                                                                                |
| C4  | CT4 - Ability to ponder the importance of information security in the economic progress of society                                                                                                                                                                                                                                           |
| C5  | CT5 - Ability for oral and written communication in English                                                                                                                                                                                                                                                                                  |

## Learning outcomes

| Learning outcomes | Study programme competences |
|-------------------|-----------------------------|
|-------------------|-----------------------------|



|                                                                                                               |      |      |     |
|---------------------------------------------------------------------------------------------------------------|------|------|-----|
| Experience in the performance of the profession and its most common functions in a real business environment. | AJ1  | BJ1  | CJ1 |
|                                                                                                               | AJ2  | BJ2  | CJ2 |
|                                                                                                               | AJ3  | BJ3  | CJ3 |
|                                                                                                               | AJ4  | BJ4  | CJ4 |
|                                                                                                               | AJ5  | BJ5  | CJ5 |
|                                                                                                               | AJ6  | BJ6  |     |
|                                                                                                               | AJ7  | BJ7  |     |
|                                                                                                               | AJ8  | BJ8  |     |
|                                                                                                               | AJ9  | BJ9  |     |
|                                                                                                               | AJ10 | BJ10 |     |
|                                                                                                               | AJ11 | BJ11 |     |
|                                                                                                               | AJ12 |      |     |
|                                                                                                               | AJ13 |      |     |
|                                                                                                               | AJ14 |      |     |
|                                                                                                               | AJ15 |      |     |
|                                                                                                               | AJ16 |      |     |
|                                                                                                               | AJ17 |      |     |
|                                                                                                               | AJ18 |      |     |
|                                                                                                               | AJ19 |      |     |
|                                                                                                               | AJ20 |      |     |

| Contents                                                                                      |           |
|-----------------------------------------------------------------------------------------------|-----------|
| Topic                                                                                         | Sub-topic |
| The student will make a stay in the company developing functions of a Master in Cybersecurity |           |

| Planning                    |                                                                                                                                            |                      |                               |             |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-------------------------------|-------------|
| Methodologies / tests       | Competencies                                                                                                                               | Ordinary class hours | Student's personal work hours | Total hours |
| Clinical practice placement | A20 A19 A18 A17<br>A16 A15 A14 A13<br>A12 A11 A10 A9 A8<br>A7 A6 A5 A4 A3 A2<br>A1 B1 B2 B3 B4 B5<br>B6 B7 B8 B9 B10 B11<br>C1 C2 C3 C4 C5 | 375                  | 0                             | 375         |
| Personalized attention      |                                                                                                                                            | 0                    |                               | 0           |

(\*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.

| Methodologies               |                                                                                                      |
|-----------------------------|------------------------------------------------------------------------------------------------------|
| Methodologies               | Description                                                                                          |
| Clinical practice placement | Prácticas externas: Estancia en empresas desarrollando funcións propias dun Master en Ciberseguridad |

| Personalized attention      |                                                                                                                                                                                                                                 |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Methodologies               | Description                                                                                                                                                                                                                     |
| Clinical practice placement | The students will have a tutor in the company and a tutor in the University, to whom the students will be able to consult doubts about the activity to develop and to whom they will have to present the results of their work. |



| Assessment                  |                                                                                                                                            |                                                                                                                                                                                      |               |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Methodologies               | Competencies                                                                                                                               | Description                                                                                                                                                                          | Qualification |
| Clinical practice placement | A20 A19 A18 A17<br>A16 A15 A14 A13<br>A12 A11 A10 A9 A8<br>A7 A6 A5 A4 A3 A2<br>A1 B1 B2 B3 B4 B5<br>B6 B7 B8 B9 B10 B11<br>C1 C2 C3 C4 C5 | The evaluation will be carried out by the tutor in the University based on the memory of the work done in the company and the evaluation of the student by the tutor in the company. | 0             |

| Assessment comments |
|---------------------|
|                     |

| Sources of information |  |
|------------------------|--|
| Basic                  |  |
| Complementary          |  |

| Recommendations                                          |
|----------------------------------------------------------|
| Subjects that it is recommended to have taken before     |
|                                                          |
| Subjects that are recommended to be taken simultaneously |
|                                                          |
| Subjects that continue the syllabus                      |
|                                                          |
| Other comments                                           |
|                                                          |

(\*)The teaching guide is the document in which the URV publishes the information about all its courses. It is a public document and cannot be modified. Only in exceptional cases can it be revised by the competent agent or duly revised so that it is in line with current legislation.