



Teaching Guide

| Identifying Data | | | | | 2023/24 |
|--------------------------|---|--------|------------|-----------|---------|
| Subject (*) | Final Year Dissertation | | Code | 614530017 | |
| Study programme | Máster Universitario en Ciberseguridade | | | | |
| Descriptors | | | | | |
| Cycle | Period | Year | Type | Credits | |
| Official Master's Degree | 2nd four-month period | Second | Obligatory | 15 | |
| Language | SpanishGalician | | | | |
| Teaching method | Hybrid | | | | |
| Prerequisites | | | | | |
| Department | Ciencias da Computación e Tecnoloxías da InformaciónEnxeñaría de Computadores | | | | |
| Coordinador | | | E-mail | | |
| Lecturers | | | E-mail | | |
| Web | moovi.uvigo.gal | | | | |
| General description | <p>The Master's Thesis (TFM) is an academic, personal and original work that must be presented in public and is evaluated by a court.</p> <p>It is a project in which the student has to show the knowledge acquired during the master. It must end with the writing in writing of a set of explanations, theories, ideas, reasoning, description of developments or designs, etc. on a theme chosen by the student, and supervised by a tutor or tutors, who will ensure their progression and the level of quality. However, the Master Thesis is the sole responsibility of the applicant for the master's degree.</p> | | | | |

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 |



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| 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 |
| 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 |
| B12 | CB6 - Poseer y comprender conocimientos que aporten una base u oportunidad de ser originales en el desarrollo y/o aplicación de ideas, a menudo en un contexto de investigación |
| 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 | | |
| Capacity for planning and executing an original work in the cybersecurity field. | | BJ2 BJ3 BJ4 BJ5 BJ12 | |
| Capacity for finding relevant information in the cybersecurity field, for its study and analysis, and the retrieval of relevant results. | | BJ6 BJ8 BJ10 BJ11 | CJ1 CJ3 CJ4 CJ5 |



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|---|---|--|------------|
| Resolution of original problems with real implications in the cybersecurity field. | AJ1 AJ2 AJ3 AJ4 AJ5 AJ6 AJ7 AJ8 AJ9 AJ10 AJ11 AJ12 AJ13 AJ14 AJ15 AJ16 AJ17 AJ18 AJ19 AJ20 | BJ2 BJ3 BJ6 BJ7 BJ8 BJ9 BJ10 BJ11 BJ12 | |
| Elaboration of a project report that summarizes the state of the art, the analyzed problematic, the objectives, the completed work, the conclusions and the future lines. | | BJ3 BJ4 BJ6 BJ7 BJ11 BJ12 | CJ2 |
| Presentation of a summary of the main results in front of a public jury. | | BJ4 | CJ1 CJ4 |

| Contents | |
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| Topic | Sub-topic |
| <p>The Master's Thesis is an academic, personal and original work in which the student has to show the knowledge obtained during the master.</p> <p>Therefore, the content of each work must be unique. Nevertheless, it must show the ability of the student to analyze a problem in a systematic way, propose solutions, analyze the results obtained and expose them clearly.</p> | <p>Polo tanto, o contido de cada traballo debe ser único, aínda que deberá mostrar a capacidade do alumno para analizar un problema dunha forma metódica, propoñer solucións, analizar os resultados obtidos e expoñelos de forma clara.</p> |

| Planning | | | | |
|-----------------------|--------------|----------------------|-------------------------------|-------------|
| Methodologies / tests | Competencies | Ordinary class hours | Student's personal work hours | Total hours |
| Oral presentation | B4 C5 | 1 | 24 | 25 |



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|---|---|---|-----|-----|
| Supervised projects | A20 A19 A18 A17 A16 A15 A14 A13 A12 A11 A10 A9 A8 A7 A6 A5 A4 A3 A2 A1 B12 B2 B3 B4 B5 B6 B7 B8 B9 B10 B11 C1 C2 C3 C4 C5 | 0 | 350 | 350 |
| 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 |
| Oral presentation | Presentation of the academic work |
| Supervised projects | The student will complete an academic, personal and original work in which he will have to show the knowledge obtained during the master. It must conclude with a set of written explanations, theories, ideas, reasoning, description of developments or designs, etc. on a subject chosen by the student, and supervised by a tutor or tutors, who will ensure the correct progression and the quality level. |

| Personalized attention | |
|------------------------|--|
| Methodologies | Description |
| Supervised projects | During the Master's Thesis there will be periodic meetings between the student and the tutors to define, orient, supervise and delimit the work, as well as to orient the writing of the dissertation. |
| Oral presentation | The directors of the work will guide the student in the preparation of the presentation of the work at the end of the master's degree. |

| Assessment | | | |
|---------------------|---|---|---------------|
| Methodologies | Competencies | Description | Qualification |
| Supervised projects | A20 A19 A18 A17 A16 A15 A14 A13 A12 A11 A10 A9 A8 A7 A6 A5 A4 A3 A2 A1 B12 B2 B3 B4 B5 B6 B7 B8 B9 B10 B11 C1 C2 C3 C4 C5 | The work will be evaluated by a panel. The student will provide a written dissertation, and will make a public presentation. The panel will use a rubric that will be publicly available. | 85 |
| Oral presentation | B4 C5 | Assesment specified in the rubric | 15 |

| Assessment comments |
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| Sources of information | |
|------------------------|--|
| Basic | |
| Complementary | Manuel Ruiz-de-Luzuriaga-Peña, Guía para citar y referenciar. Estilo IEEE, Universidad Pública de Navarra, 2016, http://www2.unavarra.es/gesadj/servicioBiblioteca/tutoriales/Citar_referenciar_(IEEE).pdf |

| Recommendations |
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| Subjects that it is recommended to have taken before |
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| Subjects that are recommended to be taken simultaneously |



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| Subjects that continue the syllabus |
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| Other comments |
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(*)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.