



IDENTIFYING DATA

Master's Thesis

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|---------------------|--|-----------|------|------------|
| Subject | Master's Thesis | | | |
| Code | V05M175V01107 | | | |
| Study programme | Máster Universitario en Ciberseguridad (en extinción) | | | |
| Descriptors | ECTS Credits | Choose | Year | Quadmester |
| | 15 | Mandatory | 2nd | 1st |
| Teaching language | Spanish Galician English | | | |
| Department | | | | |
| Coordinator | Caeiro Rodríguez, Manuel | | | |
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| Web | http://moovi.uvigo.es | | | |
| General description | The Master Thesis (TFM) is an academic work, personal and original that is presented in public and that is evaluated by a panel. | | | |

It is a project where the student has to show the knowledge acquired during the master studies. It must conclude with a written dissertation including explanations, theories, ideas, reasonings, description of developments or designs, etc. It should address a topic chosen by the student, and supervised by a director or directors, that will care for its progression and its quality. Nonetheless, the Master Thesis is the responsibility of the aspirant to the title of Master.

Training and Learning Results

| | |
|------|---|
| Code | |
| A1 | 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. |
| A2 | 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. |
| A3 | 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. |
| A4 | Students will learn to communicate their conclusions ---and the hypotheses and ultimate reasoning in their support--- to expert and non-expert audiences in a clear and unambiguous way. |
| A5 | Students will apprehend the learning skills enabling them to study in a style that will be self-driven and autonomous to a large extent. |
| B1 | 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. |
| B2 | Ability for problem-solving. Ability to solve, using the acquired knowledge, specific problems in the technical field of information, network or system security. |
| B3 | 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 communications. |
| B4 | 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 |
| B5 | 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 |
| B6 | 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 | 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. |
| C2 | Deep knowledge of cyberattack and cyberdefense techniques. |

- C3 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.
- C4 To understand and to apply the methods and tools of cybersecurity to protect data and computers, communication networks, databases, computer programs and information services.
- C5 To design, deploy and operate a security management information system based on a referenced methodology.
- C6 To develop and apply forensic research techniques for analysing incidents or cybersecurity threats.
- C7 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.
- C8 Skills for conceive, design, deploy and operate cybersecurity systems.
- C9 Ability to write clear, concise and motivated projects and work plans in the field of cybersecurity.
- C10 Knowledge of the mathematical foundations of cryptography. Ability to understand their evolution and future developments.
- C11 Ability to collect and interpret relevant data in the field of computer and communications security.
- C12 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.
- C13 Ability for analysing, detecting and eliminating software vulnerabilities and malware capable to exploit those in systems or networks.
- C14 Ability to develop a continuity business plan on the guidelines of commonly accepted norms and standards.
- C15 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.
- C16 Ability for envisioning and driving the business operations in areas related to cybersecurity, with feasible monetization.
- C17 Ability to plan a time schedule containing the detection periods of incidents or disasters, and their recovery.
- C18 Ability to correctly interpret the information sources in the discipline of criminal law (laws, doctrine, jurisprudence) both at the national and international levels.
- C19 To learn how to identify the best professional profiles for an institution as a functions of its features and activity sector.
- C20 Knowledge about the firms specialized in cybersecurity in the region.
- D1 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.
- D3 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.
- D4 Ability to ponder the importance of information security in the economic progress of society.
- D5 Ability for oral and written communication in English.

Expected results from this subject

| Expected results from this subject | Training and Learning Results |
|--|--|
| Capacity for planning and executing an original work in the cybersecurity field. | A1 A2 A3 A4 A5 |
| Capacity for finding relevant information in the cybersecurity field, for its study and analysis, and the retrieval of relevant results. | B1 B3 B5 B6 D1 D3 D4 D5 |

Resolution of original problems with real implications in the cybersecurity field.

A1
A2
A3
B1
B2
B3
B4
B5
B6
C1
C2
C3
C4
C5
C6
C7
C8
C9
C10
C11
C12
C13
C14
C15
C16
C17
C18
C19
C20
D1
D3
D4
D5

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.

A1
A3
A4
B1
B2
B6

Presentation of a summary of the main results in front of a public jury.

A4
D1
D4

Contents

Topic

The Master's Thesis is an academic, personal and original work in which the student has to show the knowledge obtained during the master.

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.

Planning

| | Class hours | Hours outside the classroom | Total hours |
|---------------|-------------|-----------------------------|-------------|
| Mentored work | 0 | 350 | 350 |
| Presentation | 1 | 24 | 25 |

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

Methodologies

Description

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|---------------|---|
| Mentored work | 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 assistance

Methodologies Description

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|---------------|---|
| Mentored work | 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. The TFM coordinator will establish tutoring hours at the beginning of the term. These hours could be checked at the subject web page https://moovi.uvigo.gal/ . |
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Tests Description

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|--------------|---|
| 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. The TFM coordinator will establish tutoring hours at the beginning of the term. These hours could be checked at the subject web page https://moovi.uvigo.gal/ . |
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Assessment

| | Description | Qualification | Training and Learning Results |
|---------------|---|---------------|-------------------------------|
| Mentored work | 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. | 100 | |

Other comments on the Evaluation

Sources of information

Basic Bibliography

Complementary Bibliography

Manuel Ruiz-de-Luzuriaga-Peña, **Guía para citar y referenciar. Estilo IEEE**, Universidad Pública de Navarra, 2016

Recommendations