**COURSE SYLLABUS**

***Pen Testing***

**1. Program identification details**

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| 1.1 Higher education institution | „Ovidius” University of Constanta |
| 1.2 Faculty | Faculty Mathematics and Computer Science |
| 1.3 Department | Mathematics and Computer Science |
| 1.4 Field of studies | Computer Science |
| 1.5 Cycle of studies (degree) | Master |
| 1.6 Degree program/qualification | Cyber Security and Machine Learning |
| 1.7 Academic year | 2022-2023 |

**2. Course identification details**

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| --- | --- | --- | --- | --- | --- | --- | --- |
| 2.1 Course title | | | **PEN TESTING** | | | | |
| 2.2 Course code | | | **FMI.CSML.I.1.11** | | | | |
| 2.3 Instructor | | | Assoc. Prof. IONESCU Viorel, Ph.D. | | | | |
| 2.4 Teaching assistant | | | Assoc. Prof. IONESCU Viorel, Ph.D. | | | | |
| 2.5 Year | 1 | 2.6 Semester | 1 | 2.7. Evaluation type | C | 2.8 Course type \*/\*\* | DAP/DO |

*\* DF – fundamental course, DD – field course, DS – specialty course, DC – complementary course, DAP – advanced study course, DSI – synthesis course, DCA – advanced knowledge course.*

*\*\* DI – mandatory course; DO – optional course.*

**3. Estimated workload (hours per semester)**

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| --- | --- | --- | --- | --- | --- | --- |
| 3.1 Number of teaching hours/week | | 2 | of which:  3.2 course | 1 | 3.3 applications*\*\*\** | 1 |
| 3.4 Total of teaching hours within the program/semester | | 28 | of which:  3.5 lecture | 14 | 3.6 seminar | 14 |
| **3.7 Student workload for individual study** | | | | | | 72 |
| ***Distribution of workload*** | | | | | | [hours] |
| Individual study of texbooks, handbooks/reader, bibliography and notes | | | | | | 16 |
| Additional research (library, electronic resources, fieldwork) | | | | | | 10 |
| Homework (preparing seminar presentations, portfolios, critical essays, research papers, etc.) | | | | | | 28 |
| Individual consultations (optional) | | | | | | 14 |
| Evaluations / exams | | | | | | 4 |
| Other activities | | | | | | 0 |
| **3.8 Total hours per semester** | *28+72=100* | |  |  |  |  |
| **3.9 Number of credits** | 4 | |  |  |  |  |

*\*\*\* S - seminar; L - laboratory; P - project*

**4. Prerequisites (if any)**

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| --- | --- |
| 4.1 Curriculum-related | Undergraduade studies; |
| 4.2 Skills-related |  |

**5. Requirements (if any)**

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| 5.1. For running the course |  |
| 5.2. For running the seminar / laboratory /project  *\*The type is to be chosen according to the discipline* |  |

**6. Acquired specific skills**

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| --- | --- |
| Professional skills | Applying specific techniques and tools to evaluate the security of information systems from the perspective of an attacker. |
| Cross-cutting skills | Execution of complex professional tasks, in conditions of autonomy and professional independence, involving the detection and solving of related problems in the development of a software application.  Efficient development of activities organized in an interdisciplinary group and development of empathic capacities for interpersonal communication, relationships and collaboration with various groups. |

**7. Course goal and objectives**

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| 7.1 The general objective of the course | Mastering the basic knowledge of the penetration testing process |
| 7.2 Specific objectives | Detection of possible vulnerabilities present at the level of IT infrastructures, as well as its exploitation.  Presentation of techniques and tools by which an attacker can compromise a computer system. |

**8. Contents**

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| --- | --- | --- |
| **8.1 Lecture** | **Teaching methods** | **Number of hours** |
| Security testing. Penetration testing process | Lecture with the synthesis and essentialization of information  Interactive learning teaching methods  Dialogue  Problematization  Conversation  Methods that contribute to the development of critical thinking  Programs  Independent and cooperative learning | 2 hours |
| Static/dynamic analysis of aplications | 2 hours |
| Identify Web and Network vulnerabilities | 2 hours |
| Exploiting security Web vulnerabilities | 4 hours |
| Exploiting security network vulnerabilities | 4 hours |
| Collection of files and information from compromised terminals | 2 hours |
| Powershell and Bash for pentesting | 2 hours |
| **Bibliography:**   1. P. Kim, *The Hacker playbook. Practical guide to penetration testing*, Secure Planet LLC, 2018 2. G. Weidman, *Penetration testing. A hands-on introduction to hacking*, No starch press, 2014 3. J. Erickson, *Hacking. The art of exploitation*, William Pollock, 2010 4. The penetration testing execution standard,  http://www.pentest-standard.org/index.php/Main\_Page | | |

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| --- | --- | --- |
| **8.2 Applications\* (seminar / laboratory / project)**  *\*The type is to be chosen according to the discipline* | **Teaching methods** | **Number of hours** |
| Tools for penetration testing of networks | Dialogue  Problematization  Conversation  Methods that contribute to the development of critical thinking | 6 hours |
| Tools for penetration testing of systems | 6 hours |
| Password attacks. Types of passwords | 2 hours |
| **Bibliography:**   1. P. Kim, *The Hacker playbook. Practical guide to penetration testing*, Secure Planet LLC, 2018 2. G. Weidman, *Penetration testing. A hands-on introduction to hacking*, No starch press, 2014 3. J. Erickson, *Hacking. The art of exploitation*, William Pollock, 2010 4. The penetration testing execution standard,  http://www.pentest-standard.org/index.php/Main\_Page | | |

**9. Correlation between the content of the course and the needs/expectations of the epistemic community, professional associations and/or significant employers relevant for the program**

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| --- |
| Assessing cybersecurity is an essential part of protecting data integrity and the stability of any structure of national interest. |

**10. Evaluation**

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| Type of activity | 10.1 Evaluation criteria | 10.2 Evaluation methods | 10.3 Percentage of final grade |
| 10.4 Course | Active participation | Oral | 10% |
| 10.5 Applications\*  (Seminar/Laboratory / Project)  *\*The type is to be chosen according to the discipline* | Active participation | Oral | 10% |
|  | Project | Oral | 40% |
|  | Exam | Oral | 40% |
|  | | | |
| 10.6 Minimum standard of achievement for the acquisition of the ECTS credits | | | |
| Static/dynamic analysis of aplications | | | |

Date of completion Course Instructor, Teaching Assistant,

20.09.2022 Assoc. Prof. IONESCU Viorel, Ph.D. Assoc. Prof. IONESCU Viorel, Ph.D.

Date of approval in the Department Head of Department,

27/09/2022 Assoc. Prof. Puchianu Crenguta, Ph.D

Dean,

Assoc. Prof. Nicola Aurelian, Ph.D