

CURRICULUM DESCRIPTION / **FIŞA DISCIPLINEI**

1. Program information / Date despre program

1.1 Higher education institution / <i>Instituția de învățământ superior</i>	West University of Timișoara / <i>Universitatea de Vest din Timișoara</i>
1.2 Faculty / Department / <i>Facultatea / Departamentul</i>	Mathematics and Informatics / <i>Matematică și Informatică</i>
1.3 Department / <i>Departamentul</i>	Informatics / <i>Informatică</i>
1.4 Study area / <i>Domeniul de studii</i>	Informatics / <i>Informatică</i>
1.5 Study cycle / <i>Ciclul de studii</i>	Masters / <i>Master</i>
1.6 Study program / Qualification / <i>Programul de studii / Calificarea</i>	Cybersecurity / Specialist in security-focused procedures and tools for information systems / <i>Securitate Cibernetică / Specialist în proceduri și instrumente de securitate a sistemelor informative</i>

2. Curriculum information / Date despre disciplină

2.1 Name of class / <i>Denumirea disciplinei</i>	Testarea vulnerabilităților în aplicații și infrastructură / Penetration testing						
2.2 Teacher for lecture / <i>Titularul activităților de curs</i>	Mario Reja						
2.3 Teacher for laboratory / <i>Titularul activităților de seminar</i>	Mario Reja						
2.4 Year of study / <i>Anul de studiu</i>	2	2.5 Semester / <i>Semestrul</i>	1	2.6 Evaluation type / <i>Tipul de evaluare</i>	DS	2.7 Type of class / <i>Regimul disciplinei</i>	DOP

3. Estimated total time (hours per semester for didactic activities) / Timpul total estimat (ore pe semestru al activităților didactice)

3.1 Hours per week / <i>Număr de ore pe săptămână</i>	3	of which / <i>din care:</i> 3.2 lecture / <i>curs</i>	2	3.3 seminary/laboratory / <i>seminar/laborator</i>	1
3.4 Hours in curriculum plan / <i>Total ore din planul de învățământ</i>	42	of which / <i>din care:</i> 3.5 lecture / <i>curs</i>	28	3.6 seminary/laboratory / <i>seminar/laborator</i>	14
Time distribution: / <i>Distribuția fondului de timp:</i>					hours / <i>ore</i>
Study time using the manual, lecture reading material, bibliography and notes / <i>Studiul după manual, suport de curs, bibliografie și notițe</i>					28

Suplimentary documentation inside a library, or online / on the field / <i>Documentare suplimentară în bibliotecă, pe platformele electronice de specialitate / pe teren</i>	28
Seminary/laboratory preparation, homework, research paper, portfolios and essays / <i>Pregătire seminare / laboratoare, teme, referate, portofolii și eseuri</i>	28
Tutorship / <i>Tutoriat</i>	6
Exminations / <i>Examinări</i>	6
Other activities / <i>Alte activități</i>	
3.7 Total hours of individual study / <i>Total ore studiu individual</i>	96
3.8 Total hours per semester / <i>Total ore pe semestru</i>	152
3.9 Number of credits / <i>Numărul de credite</i>	5

4. Preconditions (where applicable) / Precondiții (acolo unde este cazul)

4.1 for curriculum / <i>de curriculum</i>	<ul style="list-style-type: none"> Operating Systems, Programming, Security and Cryptography / Sisteme de operare, Programare, Securitate si criptografie
4.2 for competencies / <i>de competențe</i>	<ul style="list-style-type: none"> Basic knowledge of computer usage / Cunoștințe de bază în utilizarea calculatorului

5. Conditions (where applicable) / Condiții (acolo unde este cazul)

5.1 for lecture development / <i>de desfășurare a cursului</i>	Classroom properly equipped with: whiteboard, laptop/projector, computers, network, internet connection, appropriate software. Means for organizing online course activities: Google Classroom, Meet+Chat/Microsoft Teams, PowerPoint, Forms, virtual whiteboard, other specific software components for online activities
5.2 for seminary/laboratory development / <i>de desfășurare a seminarului / laboratorului</i>	Laboratory classroom properly equipped with: whiteboard, laptop/projector, computers, network, internet connection, appropriate software. Means for organizing online course activities: Google Classroom, Meet+Chat/Microsoft Teams, PowerPoint, Forms, virtual whiteboard, other specific software components for online

6. Class objectives – expected learning results, contributed to by reading and passing of the class / Obiectivele disciplinei - rezultate așteptate ale învățării la formarea cărora contribuie parcurgerea și promovarea disciplinei

Knowledge / Cunoștințe	<ul style="list-style-type: none"> Knowledge of computer networks Understanding of different network components Familiarity with exploits and vulnerabilities outside of tool suites •
Abilities / Abilități	<ul style="list-style-type: none"> Knowledge of web communications and security technologies Ability to script or write code public speaking, report writing, and being a team player
Responsability and autonomy / Responsabilitate și autonomie	<ul style="list-style-type: none"> Conducts tests on apps and networks Assesses physical security Conducts security audits Analyzes security policies Writing security assessment reports

7. Contents / Conținuturi

7.1 Lecture / Curs	Teaching methods / Metode de predare	Observations / Observații
Introduction: Penetration Testing Processs, Penetration Testing Use Cases, Information Gathering	Exercises, discussions and debates, modelling, projects, organized team-work	2 weeks – 4 hours / 2 săptămâni – 4 ore
Network Services Penetration Testing	<i>Exercises, discussions and debates, modelling, projects, organized team-work</i>	2 weeks – 4 hours / 2 săptămâni – 4 ore
Web Application Penetration Testing	<i>Exercises, discussions and debates, modelling, projects, organized team-work,</i>	2 weeks – 4 hours / 2 săptămâni – 4 ore
Social Engineering Penetration Testing	<i>Exercises, discussions and debates, modelling, projects, organized team-work</i>	2 weeks – 4 hours / 2 săptămâni – 4 ore
Client Side Penetration Testing	Exercises, discussions and debates, modelling, projects, organized team-work	2 weeks – 4 hours / 2 săptămâni – 4 ore
Mobile Application Penetration Testing	<i>Exercises, discussions and debates, modelling, projects, organized team-work</i>	2 weeks – 4 hours / 2 săptămâni – 4 ore
Penetration Testing Tools	<i>Exercises, discussions and debates, modelling, projects, organized team-work</i>	2 weeks – 4 hours / 2 săptămâni – 4 ore
Bibliography / Bibliografie : Georgia Weidman: Kali/Ubuntu documentation		Penetration Testing
7.2 Seminary / laboratory / Seminar / laborator	Teaching methods / Metode de predare	Observations / Observații
Setting Up Your Virtual Lab	Exercises, discussions and debates, modelling, projects, organized team-work	1 week – 2 hours / 1 săptămână – 2 ore

Using the Metasploit Framework	<i>Exercises, discussions and debates, modelling, projects, organized team-work</i>	1 week – 2 hours / 1 săptămână – 2 ore
Information Gathering, Finding Vulnerabilities	<i>Exercises, discussions and debates, modelling, projects, organized team-work</i>	1 week – 2 hours / 1 săptămână – 2 ore
Exploitation, Password Attacks, Post Exploitation	<i>Exercises, discussions and debates, modelling, projects, organized team-work</i>	1 week – 2 hours / 1 săptămână – 2 ore
Structured Exception Handler Overwrites, Stack-Based Buffer Overflow	<i>Exercises, discussions and debates, modelling, projects, organized team-work</i>	1 week – 2 hours / 1 săptămână – 2 ore
Web Application Testing, Client-Side Exploitation	<i>Exercises, discussions and debates, modelling, projects, organized team-work</i>	
Social Engineering, Bypassing Antivirus Applications	<i>Exercises, discussions and debates, modelling, projects, organized team-work</i>	1 week – 2 hours / 1 săptămână – 2 ore
Bibliography / Bibliografie: <i>Georgia Weidman: Penetration Testing</i> <i>Kali/Ubuntu documentation</i>		

8. Unification of class contents with the expectations of the representatives of the epistemic community, professional organisations and employers from the class's relevant field(s) of applicability / Coroborarea conținuturilor disciplinei cu așteptările reprezentanților comunității epistemice, asociațiilor profesionale și angajatorii reprezentativi din domeniul aferent programului

Class contents corresponds to the curricula of other universities, from inside the country or from the European Union. The practical contents (laboratory works) correspond to the local labor market requirements. /
Conținutul disciplinei corespunde curriculei din alte centre universitare, din țară sau Uniunea Europeană. Conținuturile practice (lucrări de laborator) corespund cerințelor de pe piața muncii locală.

9. Evaluation / Evaluare

Activity type / <i>Tip activitate</i>	9.1 Evaluation criteria / <i>Criterii de evaluare</i>	9.2 Evaluation methods / <i>Metode de evaluare</i>	9.3 Weight in final grade / <i>Pondere din nota finală</i>
9.4 Lecture / Curs	Understanding the main approaches and analysis methods used in penetration testing	Project Presentation:	60%

9.5 Seminary / laboratory <i>/ Seminar / laborator</i>	Use of appropriate software tools and implementations for specific penetration testing	Applications and laboratory assignments	40%
9.6 Minimum performance standards / <i>Standard minim de performanță</i>			
Written examination / <i>Examinare scrisă</i> : <ul style="list-style-type: none"> • To obtain a grade of 5, it is necessary to obtain a score higher than 60% for the general knowledge, as well as to demonstrate a minimum level of understanding and application of some of the algorithms presented in the course (at least 40%). • To obtain a grade of 10, it is necessary to obtain a score higher than 90% for both general knowledge and detailed knowledge, as well as a good understanding of the presented algorithms. 			

Date of completion /
Data completării

Teacher for class /
Titular de disciplină

Date of approval inside department /
Data avizării în departament

Department director /
Director de departament