REVERSE ENGINEERING – CURS 0x00

ADMINISTRATIVE INFORMATION

Cristian Rusu

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WHO WE ARE

- **Cristian Rusu**
  - course
  - contact: cristian.rusu@unibuc.ro
  - class web page: https://cs.unibuc.ro/~crusu/re/index.html

- **Cristian-Cătălin Nicolae and Alexandru Mocanu**
  - lab work
  - contact
    - cristian-catalin.nicolae@unibuc.ro
    - alexandru.mocanu@s.unibuc.ro

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ORGANIZATION AND EVALUATION

- **organization:**
  - 1h course / week
  - 2h lab work / 1 week

- **evaluation:**
  - 60% lab work during the semester
  - 40% final project (multiple RE tasks)

- **how to pass:**
  - > 50% for the lab work
    - you can have miss (unannounced) a maximum of two lab session

  - > 50% final project

  - both are hard limits!

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ORGANIZATION AND EVALUATION

- **for the course**
  - we talk about the big ideas in RE
  - concept/methods/techniques
  - here, the ideas are important

- **for the lab work: you will need a laptop to be able to run all the lab work during the semester**
  - practice, practice, practice

  - a lot of programming
  - Assembly x86
  - basic Windows/Linux/Git/C/OS knowledge is assumed

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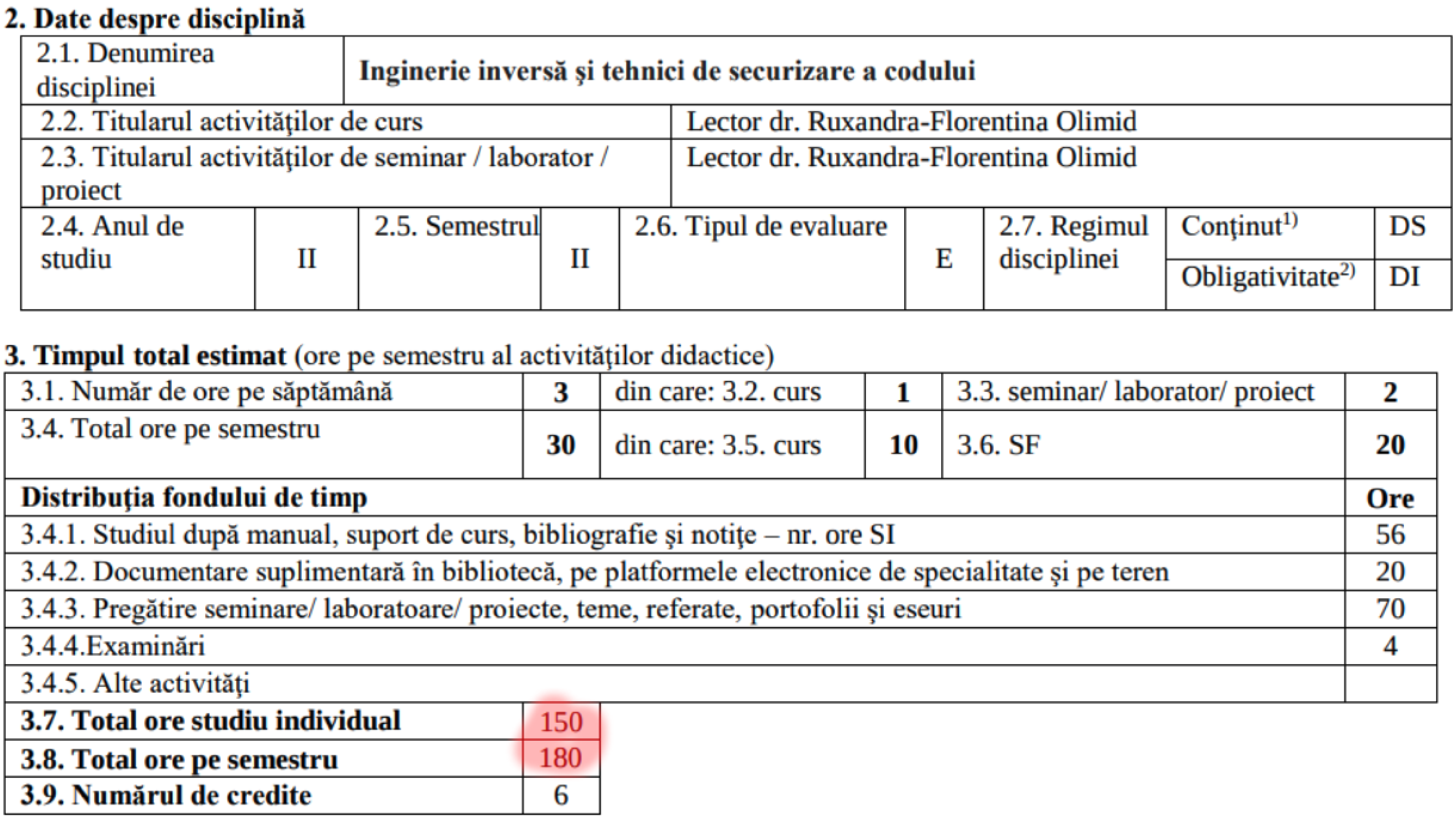
ORGANIZATION AND EVALUATION

- **the expected work-load**



2. Date despre disciplină

2.1. Denumirea disciplinei	**Inginerie inversă şi tehnici de securizare a codului**							
2.2. Titularul activităţilor de curs				Lector dr. Ruxandra-Florentina Olimid				
2.3. Titularul activităţilor de seminar / laborator / proiect				Lector dr. Ruxandra-Florentina Olimid				
2.4. Anul de studiu	II	2.5. Semestrul	II	2.6. Tipul de evaluare	E	2.7. Regimul disciplinei	Conţinut1)	DS
							Obligativitate2)	DI

3. Timpul total estimat (ore pe semestru al activităţilor didactice)

3.1. Număr de ore pe săptămână	**3**	din care: 3.2. curs	**1**	3.3. seminar/ laborator/ proiect	**2**
3.4. Total ore pe semestru	**30**	din care: 3.5. curs	**10**	3.6. SF	**20**
Distribuţia fondului de timp					**Ore**
3.4.1. Studiul după manual, suport de curs, bibliografie şi notiţe – nr. ore SI					56
3.4.2. Documentare suplimentară în bibliotecă, pe platformele electronice de specialitate şi pe teren					20
3.4.3. Pregătire seminare/ laboratoare/ proiecte, teme, referate, portofolii şi eseuri					70
3.4.4.Examinări					4
3.4.5. Alte activităţi					
3.7. Total ore studiu individual	150				
3.8. Total ore pe semestru	180				
3.9. Numărul de credite	6				

NO PLAGIARISM IS ALLOWED

- **you will fail the class**
- **you will be reported to the appropriate institutional offices**
- **NO copy/paste anywhere**
- **do not copy from your colleagues (responsibility is shared)**

STRUCTURE OF THE COURSE

- Introduction to RE
- x86 crash course
- Static analysis
- Dynamic analysis

- Smashing the stack
- NX/DEP, ASLR, ROP

- RE for other platforms (not Win32 and Linux)
- Further topics

OBJECTIVES

- understand what an executable does and how it works
- go from binaries back to something resembling source code
- pitfall due to architecture and coding issues
- exploit binaries

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OBJECTIVES

- **you will be able to analyze a binary executable**
  - understand CPU execution

  - analyze CPU instructions
  - follow execution paths and logic
  - monitor the interactions with the OS and other software

  - in many ways, you will become a detective of some sort

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OBJECTIVES

- **Jobs in:**
  - cybersecurity
  - malware analysis
  - gaming
  - academia/research
  - …
  - in general, RE boosts your profile

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GENERAL REFERENCES

- **Alex Gantman, In Defense of Reverse Engineering, https://againsthimself.medium.com/in-defense-of-reverse-engineering-e07fe19b26c**

- **Eldad Eilam, Reversing: Secrets of Reverse Engineering**

- **Jon Erickson, Hacking: The Art of Exploitation**

- **Bruce Dang et. al., Practical Reverse Engineering: x86, x64, ARM, Windows Kernel, Reversing Tools, and Obfuscation**

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