# Robust Software

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**Mestrado em Cibersegurança**

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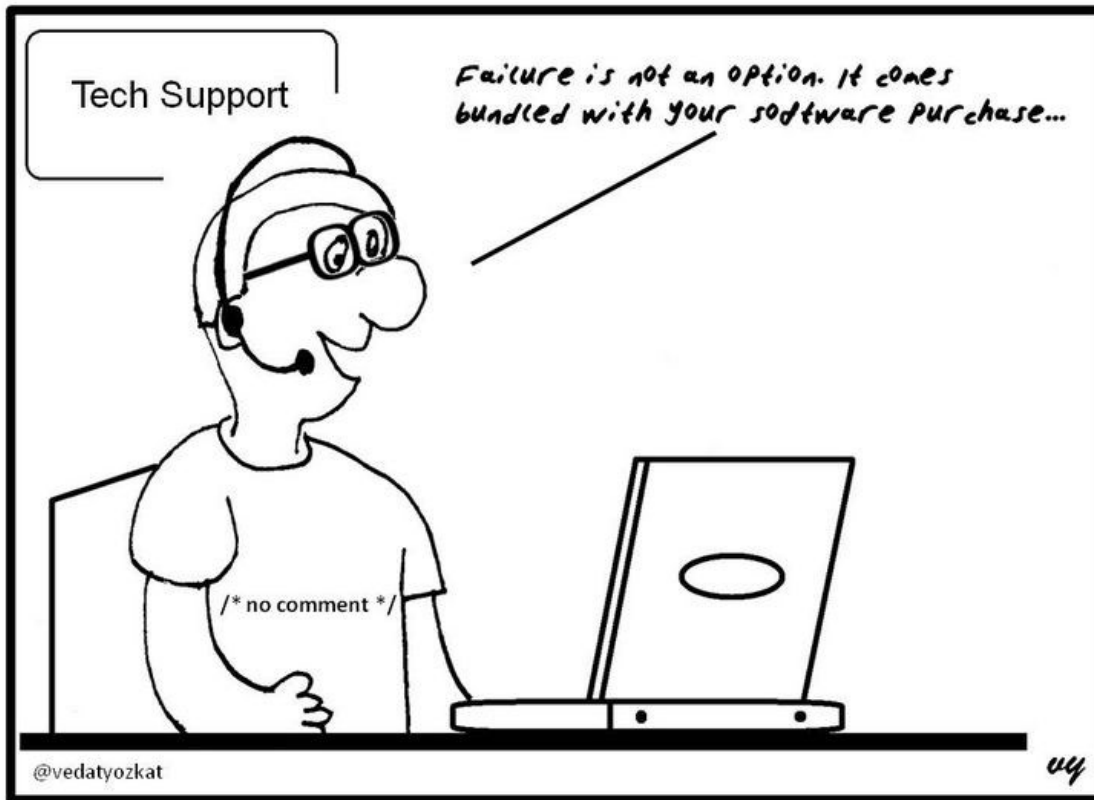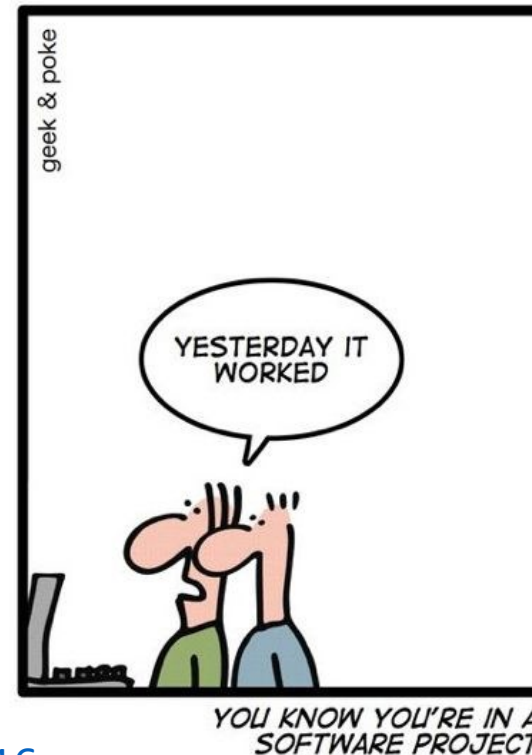- linkedin: [https://www.linkedin.com/in/nunopedrojesussilva](https://www.linkedin.com/in/nunopedrojesussilva)

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# Robust Software



[Adobe Flash Shutdown Halts Chinese Railroad for Over 16 Hours Before Pirated Copy Restores Ops (thedrive.com)](#)

# Objectives

- To know techniques for developing robust software.
- To evaluate and test the security of software.
- To avoid typical errors in development.
- To know static and dynamic analysis techniques.
- To be able to develop and operate applications with security requirements.
- To know international standards.

# Topics

Secure software design principles

Software security lifecycle

Software quality attributes

Security requirements

Common software attacks

Safe programming to avoid common errors (CWE)

Actions traceability

Static analysis techniques

# Topics

Fuzzy dynamic analysis techniques (fuzzing)

Security tests (black box and white box) and validation

Safe development and operations techniques (DevSecOps)

Specific aspects of common languages

Side-channels

Safety Standards and systems certification

Relations between safety and security

Exercises

# Method

- Classes (theoretical part)
- Student Exploration / Exercises (Groups of 3 or 4)
- Class discussions

- UA Classes
- 7 Classes: Every 2 weeks/Saturdays (9-11, 11-13 and 14-16)*
- Of course, there is a break in the middle (remind me of that!)
- *canteen opens at 13:00

## Julho 2024

| N° | Se | Te | Qu | Qu | Se | Sá | Do |
|---|---|---|---|---|---|---|---|
| 27 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 28 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| 29 | 15 | 16 | 17 | 18 | 19 | 20 | 21 |
| 30 | 22 | 23 | 24 | 25 | 26 | 27 | 28 |
| 31 | 29 | 30 | 31 | | | | |

## Agosto 2024

| N° | Se | Te | Qu | Qu | Se | Sá | Do |
|---|---|---|---|---|---|---|---|
| 31 | | | | 1 | 2 | 3 | 4 |
| 32 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 33 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| 34 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
| 35 | 26 | 27 | 28 | 29 | 30 | 31 | |

## Setembro 2024

| N° | Se | Te | Qu | Qu | Se | Sá | Do |
|---|---|---|---|---|---|---|---|
| 35 | | | | | | | 1 |
| 36 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 37 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| 38 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |
| 39 | 23 | 24 | 25 | 26 | 27 | 28 | 29 |
| 40 | 30 | | | | | | |

## Outubro 2024

| N° | Se | Te | Qu | Qu | Se | Sá | Do |
|---|---|---|---|---|---|---|---|
| 40 | | 1 | 2 | 3 | 4 | 5 | 6 |
| 41 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 42 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 43 | 21 | 22 | 23 | 24 | 25 | 26 | 27 |
| 44 | 28 | 29 | 30 | 31 | | | |

## Novembro 2024

| N° | Se | Te | Qu | Qu | Se | Sá | Do |
|---|---|---|---|---|---|---|---|
| 44 | | | | | 1 | 2 | 3 |
| 45 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 46 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 47 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| 48 | 25 | 26 | 27 | 28 | 29 | 30 | |

## Dezembro 2024

| N° | Se | Te | Qu | Qu | Se | Sá | Do |
|---|---|---|---|---|---|---|---|
| 48 | | | | | | | 1 |
| 49 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 50 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| 51 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |
| 52 | 23 | 24 | 25 | 26 | 27 | 28 | 29 |
| 1 | 30 | 31 | | | | | |

# Schedule

- Classes:
    - **1/2** - 21-09-2024
    - **3/4** - 12-10-2024
    - **5/6** - 26-10-2024
    - **7/8** - 9-11-2024
    - **9/10** - 23-11-2024
    - **11/12** - 7-12-2024
    - **13** - 21-12-2024

- Final Exam:

Morning: Theoretical
Afternoon: Practical / Team Work

**Calendário de Exames
por Disciplina ou Departamento**

| Pesquisa por departamento | Pesquisa por disciplina |
|---|---|
| Seleccione um departamento ⌄ | Introduza o(s) código(s) da(s) disciplina(s) a pesquisar, separados por ; |
| Pesquisar Por Departamento | Pesquisar Por Disciplina |

To define

January / Feb 2025

# Evaluation

- Exercises / Practical Exploration Work : 45% of the final grade
  - 4 or 5 exercises (individual + team work)
- Exam: 45% of the final grade
- Attendance: 10% of the final grade
  - 1 absence: OK (10%)
  - 2 absences: 5%
  - 3 or more absences: 0%

# 7 Rules

- #1: Be on time

- #2: Don't answer your phone

- #3: No texting

- #4: No web browsing (unless specifically asked or topic related)

- #5: Respect each other

- #6: Discuss the problem, not the person

- #7: Be active, take notes, ask questions!

# Q&A