0 PRESENTATION

course “software requirements and architecture”

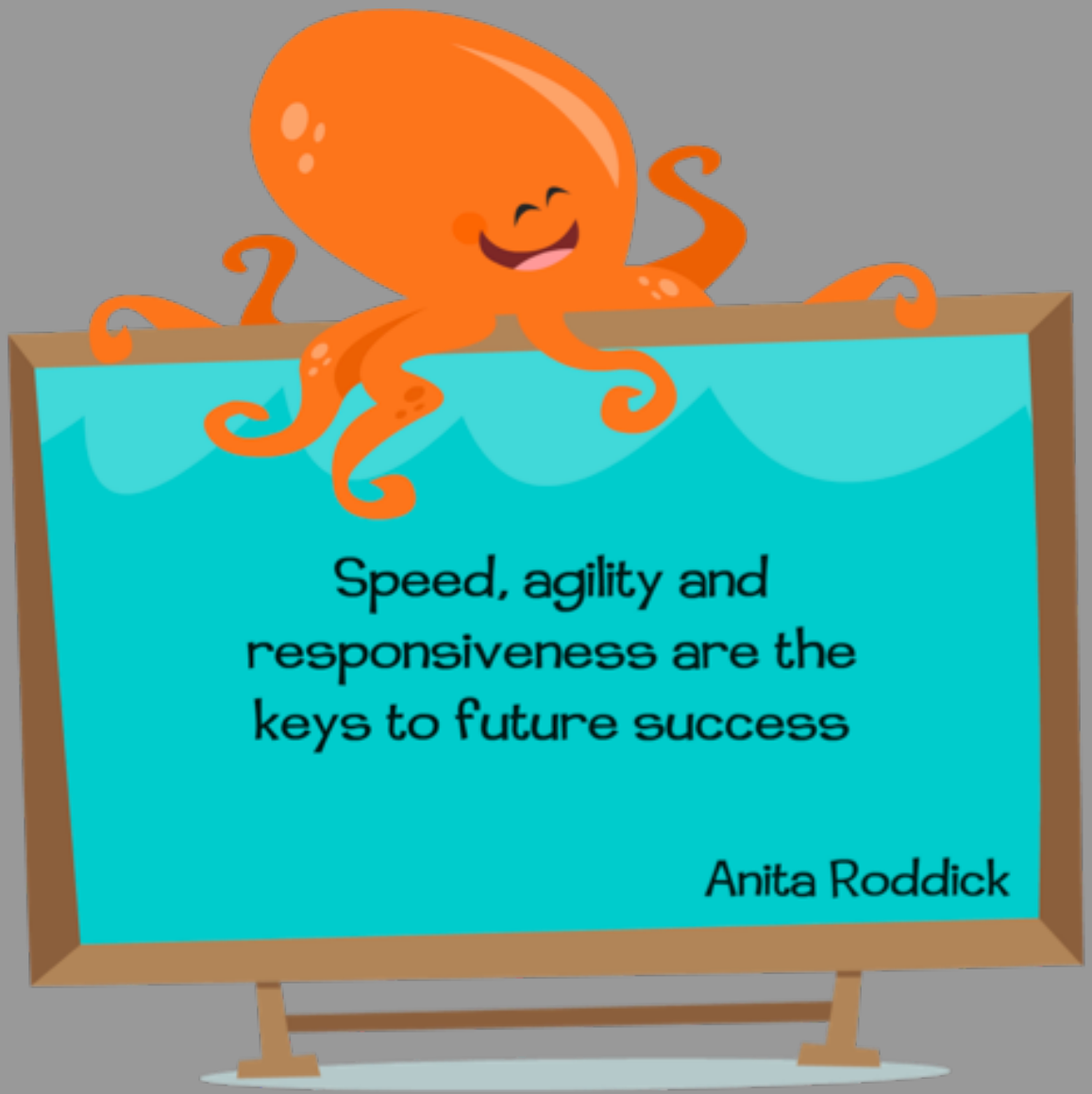
Sep 2022

software engineering

- This course is about **SOFTWARE ENGINEERING**.

application of a systematic, disciplined and quantifiable approach to the analysis, design, implementation and exploitation of software systems, resorting to knowledge, principles, techniques and methods that originate from the empirical-scientific advances, in an ethical context to satisfy the necessities of the human development.

the world changes rapidly



objectives of the course

- This course focuses on various topics related to requirements engineering and software design.
- It addresses requirements elicitation, requirements documentation, and modelling.
- It addresses software design, risk, design tactics, and design patterns.
- The student will be exposed to methods and techniques that help to characterise, in a systematic manner, the requirements and the architecture of the intended system.

learning outcomes

Upon finishing this course, the student will be able to:

1. apply requirements engineering methods to elicit, prioritize and document requirements,
2. use techniques to refine quality attributes,
3. analyse architectural alternatives based on problem domain and quality attributes,
4. describe architectures using views, patterns and styles,
5. apply appropriate design patterns to better structure software systems.

prerequisites

1. Students should have solid knowledge on:
   - object-oriented programming
   - object-oriented modelling
   - UML
2. Additionally, it is desirable that they have:
   - knowledge on patterns
   - proficiency in following software development methods

professors

João M. Fernandes — T

André L. Ferreira — PL1 PL3 PL7

Manuel Alves — PL5 PL6

Paulo Rafael Sousa — PL2 PL4 (project support)

assessment & calendar

- classes: Sep 20 – Dec 13 (13 weeks)
- final mark = 0.6 × test/exam + 0.4 × project
- To approve, a student must have:
  - ≥8.00 test/exam
  - ≥9.50 project
- test Jan 10; exam Jan 31
- project is developed by teams of five students
- project deadlines: Nov 04, Dec 02, Jan 17
- project mark for groups with 3 or 4 students get bonus (in each deadline, +0.3 and +0.2, respect.)
- project mark is affected by individual performance:
  - individual variation [-2..+2] (provided by each team)
  - sum of variations is 0 within the team
- project mark in 2021/22 can be reused this year (send email)

some rules

- you can send us emails, but it is **NOT** guaranteed that we will answer
- deadlines will not be changed, unless strictly necessary
- we do not control who is present in the PL classrooms; we do count how many students are present
- if PL classes have in two consecutive weeks less than 10 students, we may cancel it and move students to other classes

bibliography

- Fernandes JM and Machado RJ; *Requirements in engineering projects*, Springer, Lecture Notes in Management and Industrial Engineering series, 2016. `http://www.springer.com/978-3-319-18596-5`

- Fairbanks G; *Just-enough software architecture: A risk-driven approach*, Marshall & Brainerd, 2010. `https://www.georgefairbanks.com/book`