

# MSc in Computer Engineering, Software Systems Engineering

Team project and Oral exam

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I. a team is a predefined set of students sharing information and knowledge, possibly (but not necessarily) synchronized; an industrial/business process with related data will be assigned to each team;

II. the purpose of the project is to develop a pipelined application logic based on **DataOps** to support the process in terms of: **automation** (cognitive effort), **responsiveness** (time), **elasticity** (data load), **resiliency** (data error), **interoperability** (smooth communication);

III. the group will manage the project according to the agile methodology, i.e., by incrementally adding new functionalities, via its private Trello board.

IV. the documentation is mostly based on different diagrams related to Unified Process: workflow requirements, analysis, design, implementation, test. Project management is also considered; such diagrams are shared using a private MS Word document;

V. the application logic will be developed with the PyCharm professional IDE, equipped with the Pylint code analysis, a private GitHub repository as a distributed version-control system;

VI. a different Python application logic will be developed for each phase of the pipeline; each application communicate via restful API, transmitting reports in JSON format and PNG images;

VII. each student will devote to the project **90 hours**, partially in-class if he/she is regularly attending;

VIII. the final version of the project will be delivered to the Moodle delivery portal, as a pdf documentation generated from the word file, and a zip file generated from the GitHub repository. The project will be installed and presented by the student on his/her or on another machine.

The **oral exam** consists in the discussion of report and software, in the form of an interview. The following elements allow the exam to be successfully passed, when using the recommendations of the quality check,

The aspects of the Unified Process that determine the grade are also summarized.

- SUBMISSION: via the project submission system, a member of the team submits the report in pdf format (generated from the shared docx file) and a zip file downloaded from the Github;
- TRELLO AND CLOCKIFY: the Trello board tasks and the Clockify dashboard are also discussed; each member should spend 90 hours;
- WF REQUIREMENTS: Process Landscape (Signavio), BPMN diagram (Signavio);
- WF ANALYSIS: Use case, mockup; detailed use case; class diagram; sequence diagram;
- WF DESIGN: class diagram; sequence diagram;
- WF IMPLEMENTATION: Deployment diagram;
- WF TEST: report with non-automation, non-responsiveness, non-elasticity, non-resiliency, non-interoperability; a live automation test and a live maintenance will be required;
- SETUP AND USE MANUAL;
- CODE QUALITY: formal (pylint) and inspection.