ECAM
BRUSSELS ENGINEERING SCHOOL

Fall 2019
Sébastien Combéfis

I402A Software Architecture and Quality Assessment

Competencies List

This document provides the list of basic and advanced competencies, with a precise description, that can be acquired through the *I402A Software Architecture and Quality Assessment* activity.

Basic Competencies

Basic competencies are specific to a teaching unit or activity and a 100% mastery level for all of them is required to succeed the teaching unit or activity (10/20).

Code	The learner is able to...
Code	
SA001	understand GoF design patterns, bad smells and programming paradigms and argue for the most appropriate choice for a given situation.
Software architecture	
SA101	describe an architecture at a high level with a block diagram.
SA102	describe and illustrate with relevant examples the main architectural styles.
Software evaluation	
SA201	define what is software quality and explain how it can be ensured.
SA202	understand and illustrate the links between a software architecture and its quality.
TDD and CI	
SA301	understand the TDD cycle and refactoring and follow these methodologies to improve the quality of a code.
SA302	deploy a set of tools for continuous integration (GitHub, Jenkins, etc.).
Architect's role	
SA401	understand what is the conceptual integrity and take actions to ensure it a for project.
SA402	propose one or several architectures for a given case study and argue the proposition.

Advanced Competencies

Advanced competencies could be transversal to several teaching units or activities and increasing the mastery level of any of them is global to all the teaching units and activities where it is declared.

Code	The learner is able to...
Code	
OP001	design and implement a program following good OOP practices.
GA001	make a code audit, propose changes and argue them with quality criteria.
Software architecture	
SA103	understand interaction-oriented, distributed, service-oriented and data-oriented architectures, propose such an architecture for a given case study and argue the choice.
Software evaluation	
SA203	compare several metrics to measure a given quality criterion and argue about the best choice.
GA002	make an architecture audit, propose changes and argue them with quality criteria.
Architect's role	
SA403	propose a suitable architecture style for a given case study with quality constraints.
SA404	compare different architectures using quality criteria.