II.3525 – Tests & Tests Automation

GENERAL INFORMATION

Module Title: Tests & Tests Automation
Module ID: II.3525
Module leader: Maurras TOGBE & Hedi YAZID ECTS: 5
Average amount of work per student: 120h to 150h (42h of supervised sessions)
Teamwork: Yes
Tags: API testing, CLI testing, GUI testing, SUT, Test Automation, RPA

PRESENTATION

In the digital world, where technological innovations are constantly evolving, quality assurance is at the heart of any software or hardware development process. Testing helps ensure the reliability, robustness, and safety of technology products. In addition, with the increasing complexity of IT and electronic systems, test automation is becoming essential to ensure comprehensive coverage of test cases and to accelerate development cycles. Teaching testing and test automation develops essential skills in students such as critical thinking, problem-solving, and collaboration. By working on test projects, they learn how to analyze specifications, design relevant test cases, and interpret the results. These skills are transferable to other digital areas, thus strengthening their employability and their ability to adapt to technological developments.

In this module, students will learn the testing methodologies that provide them with the skills to assess the quality of the software they will develop or manage in their professional careers. Students who are proficient in test automation tools are better equipped to meet industry challenges of tight deadlines and increasing demands for quality and reliability.

PEDAGOGICAL OBJECTIVES

Objectives

- Master some approaches to test and test automation and deployment planning
- Master the Test Automation Architecture
- Test Automation Reporting and Evaluation

Prerequisites

- Algorithm and Programming, Java.
- Knowledge of IT project management is an asset.
- Command lines

Content/Program

This module aims to provide students with the theoretical and practical knowledge necessary to understand the importance of testing in software development, as well as to master test automation techniques and tools. Students will learn several concepts such as: the different types of testing (API testing, CLI testing, GUI testing, SUT, test automation architecture, test automation framework, test automation strategy, execution automation of the test, Scenario of test, Tests Tools), different testing strategies and methodologies, test and test automation best practices. At the end of this course, students will be able to use different tools for test management, anomaly management, automated testing (e.g. JIRA, Selenium, JUnit, JMeter, etc.)

Concepts

- Methodologies
- Different types of testing
- Test Automation Architecture (TAA)
- Stable of the SUT
- Test Automation Strategy
- Test Automation Framework (TAF)
- Test Automation Metrics and Reporting
- Transition from manual to automated testing
- Selecting the Test Automation Approach and Deployment Planning

Tools used

- Apache JMeter
- UiPath
- Jira Software
- Selenium , Squash, XRay(integrated with JIRA), Gitlab (continuous
- IDE Java/Python/PHP

Subsequent mobilizations at ISEP

- This module is recommended for studentswishing to pursue their career in the testing and DevOps professions.
- This module can be useful for all software development modules
- Mastering this module will be an asset in end-of-course projects

TEACHING METHODS

Learning methods

- The module is divided into 25% courses and 75% practical work/project.
- During the practical work, students will discover different popular tools for test and test automation covering concepts such as: API testing, GUI testing, test automation architecture, test execution automation, etc.
- During project hours, students work in project mode

Evaluation methods

- Individual and collective
    - Practical work to be handed in
    - Team project
    - Final Exam

Language of work

- The course and materials are in English
- Students will have the choice of submitting their work in French or English.

BIBLIOGRAPHY, WEBOGRAPHY, OTHER SOURCES

- https://cftl.fr
- https://cftl.fr/tests-logiciels/comprendre-les-tests/
- https://rpathautomation.com
- https://powerautomate.microsoft.com/fr-fr/what-is-rpa/