

## Numerical Tools for Engineers and Data Science



### SCHOOL

Polytech Graduate School of  
Engineering



### CAMPUS

Belle-Beille



### LEVEL

Engineering 4th year



### OPEN TO EXCHANGE STUDENTS

Yes



### SEMESTER

Fall (S1)

- > **Degree course:** Quality, Innovation and Reliability Engineering
- > **Teaching unit:** UE 7-3 Quality, Innovation, Reliability methodology
- > **Course language:** English
- > **Duration (hours):** 34.67
- > **ECTS:** 2
- > **Teacher(s):** Sylvain Verron

#### > Assessment:

- Continuous assessment
- Final exam

#### > Teaching methods:

- Lecture course 4 hours  Case study
- Tutorial course hours  Project
- Practical work 30.67 hours

## COURSE DESCRIPTION

Discovery of basic and advanced statistical functions for a Quality / SDF engineer: use of the "Analysis Utility" tool, including Descriptive Statistics, Histogram, Analysis of variances. - Introduction to Data Science  
- Discovery and labor price "Tables and dynamic cross-media graphics"  
- Use of Excel for the modeling of physical phenomena (notion of model, calculation by regression method): Function "Droitereg", "calculus matriciel", "Solveur"  
- Estimation by Maximum likelihood of statistical law parameters, based on the solver.  
- VBA under Excel: Reminders / Initiation on VB language - Reminders of Excel (basic functions, Data processing)  
- VBA programming under Excel (Programming environment, Sheets, Controls, Event management, Excel-specific functions, Working method )

## OBJECTIVES

The student will know how to use the Excel spreadsheet to carry out advanced processing / calculations (involving in particular statistical calculations), how to design and realize a software development in Excel with VBA (interaction with spreadsheets)  
- Applying a structured approach.  
- Introduction to Data Science

## PREREQUISITES

Excel Basics, Statistics and Probabilities

## SELECTIVE BIBLIOGRAPHY

VBA Excel 2016 ma trise la programmation sous Excel , Th orie et TP corrig s. 36 H de mise en pratique. Mich le Amelot et Claude Duigou, St Herblain :  ditions ENI, cop. 2016  
- Travaux pratiques avec Excel 2007 et 2010, Saisie et mise en forme, formules et exploitation des donn es, courbes et graphiques. Lemainque, Fabrice. Paris : Dunod, 2011