

UE Scientific Methodology, Regulatory and ethical data usage



Level
Baccalaureate
+5



ECTS
6 credits



Component
UFR IM2AG
(informatique,
mathématiques
et
mathématiques
appliquées)

- > **Teaching language(s):** English
- > **Open to exchange students:** Yes
- > **Code d'export Apogée:** GBX9MO61

Presentation

Description

The course aims to provide the fundamental basis for a sound scientific methodology of experimental evaluation in computer science. This lecture emphasizes on methodological aspects of measurement and on the statistics needed to analyze computer systems, human-computer interaction systems, and machine learning systems. We first sensitize the audience to reproducibility issues related to empirical research in computer science as well as to ethical and scientific integrity aspects. Then we present tools that help address the aforementioned issues and we give the audience the basis of probabilities and statistics required to develop sound experiment designs. The content of the lecture is therefore both theoretical and practical, illustrated by a lot of case studies and practical sessions. The goal is not to provide analysis recipes or techniques that researchers can blindly apply but to make students develop critical thinking and understand some simple (and possibly not-so-simple) tools so that they can both readily use and explore later on.

Course parts

Lectures

Lectures (CM)

36h

Recommended prerequisites

The lecture is self-content and targets 2nd year master students in computer science. We will mostly use the R language during the lecture but most programs will be a few lines of script and we will provide references to learn the basics.

Knowledge check

- Several homeworks and practical evaluations counting for 50%,
- and a 3 hours final written exam counting for 50%

Period : Semester 9

Bibliography

- Last year's series of lectures: [🔗 https://github.com/alegrand/SMPE/tree/master/sessions/2020_10_Grenoble](https://github.com/alegrand/SMPE/tree/master/sessions/2020_10_Grenoble)
- The "Reproducible research: Methodological principles for a transparent science" MOOC: [🔗 https://learninglab.inria.fr/en/mooc-recherche-reproductible-principes-methodologiques-pour-une-science-transparente/](https://learninglab.inria.fr/en/mooc-recherche-reproductible-principes-methodologiques-pour-une-science-transparente/)

Useful info

Contacts

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Campus

➤ Grenoble - University campus