

- Faculté des sciences
- www.unine.ch/sciences

Introduction to machine learning (3IN1042)

Filières concernées	Nombre d'heures	Validation	Crédits ECTS
Bachelor en science des données	Cours: 2 ph Exercice: 2 ph	Voir ci-dessous	6

ph=période hebdomadaire, pg=période globale, j=jour, dj=demi-jour, h=heure, min=minute

Période d'enseignement:

- Semestre Automne

Equipe enseignante

Christos Dimitrakakis
Hortence Yiepnou Nana
Elif Yilmaz

Contenu

This course gives a methodological, theoretical and practical introduction to machine learning. Topics covered:

- Learning problems: estimation, prediction, classification, regression
- Pipeline: Experiment design, data collection and processing
- Data analysis: generalisation, model selection, testing and simulation
- Principles: loss minimisation, Bayesian inference
- Algorithms: stochastic gradient descent
- Models: nearest neighbours, neural networks, graphical models
- Applications: healthcare, image processing, text prediction/generation
- Python: pandas, numpy, , matplotlib, scikitlearn, statsmodels

Forme de l'évaluation

- Continuous evaluation
- Pen-and-paper exercises
 - Lab work
 - In-class quizzes

Modalités de rattrapage

The quizzes can be retaken as an oral exam (or quick written test). Failure to participate in the exercises and labs requires a repetition of the course.

Pré-requis

- Probability
- Calculus
- Linear Algebra
- Python

Forme de l'enseignement

- 4 hours of mixed lectures, demos, exercises, group work and tutorials
- Short videos and course notes
- Office hours: 14:15-15:00 on Tuesday (by appointment).

Objectifs d'apprentissage

URLs	1) https://github.com/olethrosdc/machine-learning-neuch
------	--

- Faculté des sciences
- www.unine.ch/sciences

Introduction to machine learning (3IN1042)

Au terme de la formation l'étudiant-e doit être capable de :

- Communicate results
- Simulate pipelines
- Explain algorithms
- Formulate scientific questions
- Compare methods
- Design experiments
- Estimate effects
- Identify learning problems

Compétences transférables

- Communicate research
- Formulate problems
- Synthesise methods
- Present results
- Develop project
- Explain methods and algorithms