

- Faculté des sciences
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### Statistical learning (3ST2020)

Filières concernées	Nombre d'heures	Validation	Crédits ECTS
<b>Master en statistique</b>	<b>Cours: 2 ph</b>	Voir ci-dessous	3

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

#### Période d'enseignement:

- Semestre Printemps

#### Equipe enseignante

Dr. Pierre-Yves Deléamont  
Institut de statistique  
Av. de Bellevaux 51 , CH-2000 NEUCHATEL

#### Contenu

This course is meant as an overview of commonly used methods in statistical learning. If time permits, the following topics will be covered:

- Fundamental ideas of statistical learning theory
- Basic linear regression
- Basic classification
- Resampling techniques
- Subset selection
- Regularization
- Dimension reduction
- Moving beyond linearity
- Tree-based methods
- Support vector machines
- Basics of neural networks

#### Forme de l'évaluation

The final mark will be based on a 2 hour written examination.

#### Documentation

- James, G., Witten, D., Hastie, T., and Tibshirani, R., An Introduction to Statistical Learning: with Applications in R. Springer, 2013.
- Friedman, J., Hastie, T., and Tibshirani, R., The Elements of Statistical Learning: Data Mining, Inference and Prediction (2nd edition). Springer, 2009.
- Bishop, C.M., Pattern Recognition and Machine Learning. Springer, 2006.
- Goodfellow, I., Bengio, Y., and Courville, A., Deep Learning. MIT Press, 2016.

#### Forme de l'enseignement

- 3 ECTS credits
- Spring semester
- Elective course for master in statistics (choose 18/24 ECTS)