ICT for Smart Grids & Smart Cities
Data Science

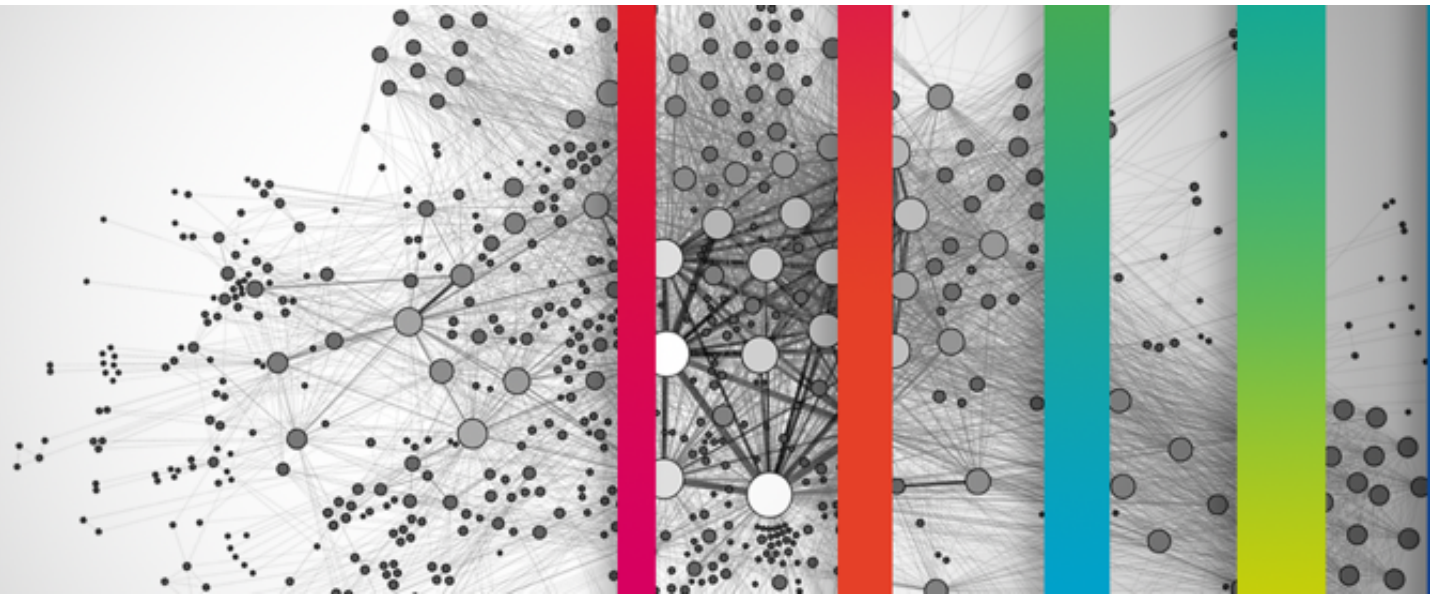**Genoveva Vargas-Solar**
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http://vargas-solar.com/data-centric-smart-everything/

https://classroom.google.com/c/MTQ4MzcwMjY1MDEz?cjc=5bz2tk6

Slack channel: https://join.slack.com/t/colenationale-5jr8199/shared_invite/zt-hhf9euv7-bmp7Kn9LL68RyzdhJnbKxA

THIS LECTURE

OBJECTIVE & LEARNING OUTCOMES

GENERAL OBJECTIVE

- Describe the principles of the new emerging data science
- Teach how to apply its method and techniques for analysing data collections through experiments running on top of Big Data analytics environments willing to analyse, model and predict the behaviour of complex systems.

LEARNING OUTCOMES

Design and implement data science experiments devoted to the analysis, modelling and predicting the behaviour of complex systems.

- Understand theoretically and technically the steps of a general data science process.
- Apply tools for collecting and preparing data collections from datasets produced under different conditions.
- Understand and know how to use existing data analytics techniques: aggregation, consolidation, statistics, machine learning methods.
- Make decisions on the data analytics techniques to apply according to the data properties & the analytics objective.

CONTENT

Introduction

Data centric sciences: Principles and common aspects

Digital data collections: Characteristics and properties

Data science: Big data, data analytics algorithms & tools

Designing experiments

Data collections life cycle

Exploring and preparing data collections for building corpora

Architectural settings: From in house to large scale experiments

Descriptive statistics
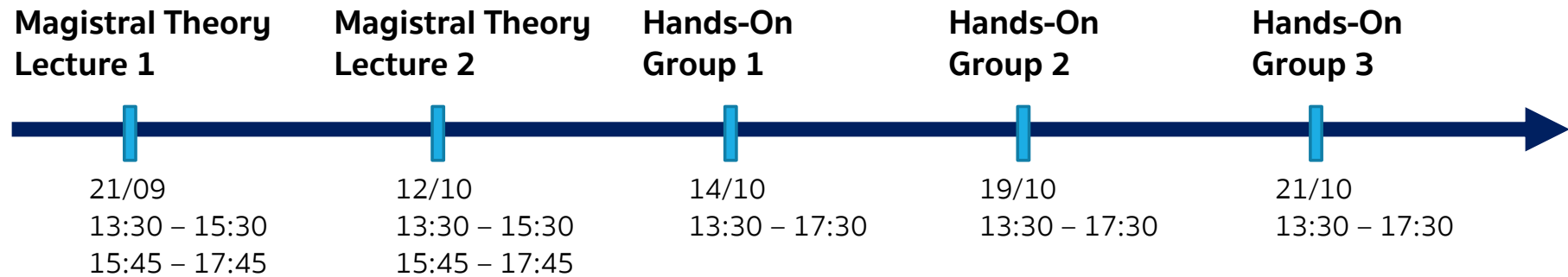
Preparing data sets

Explanatory data analysis

Estimation

Statistical inference

The frequentist approach

Measuring the variability in estimates

Testing hypothesis

Unsupervised learning

What is learning?

Clustering

ORGANISATION & EVALUATION

Magistral Theory Lecture 1

Magistral Theory Lecture 2

Hands-On Group 1

Hands-On Group 2

Hands-On Group 3

21/09
13:30 – 15:30
15:45 – 17:45

12/10
13:30 – 15:30
15:45 – 17:45

14/10
13:30 – 17:30

19/10
13:30 – 17:30

21/10
13:30 – 17:30

Hands on reports   20%   (according to the official planning)
Final exam/Project   80%   (according to the official planning)

CONTACT & ADVISING

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French Council of Scientific Research, LIG lab

ADVISING & QUESTIONS:

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