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Courses / Modules / COMP6235

Foundations of Data Science

Foundations of Data Science

When you'll study it

Semester 1

CATS points

15

ECTS points

7.5

Level

Level 7

Module lead

Adriane Chapman

Academic year 2023-24

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Syllabus

The course will introduce students to the data scientist toolkit and the underlying core concepts. It will cover the full technical pipeline from data collection (sampling methods, crawling) to processing and basic notions of statistical analysis and

visualization. The module will also include advanced topics in high-performance computing, including non-relational databases and MapReduce. By taking this course the students will be provided with the basic toolkit to work with data (CSV, R, MongoDB). To support these learning objectives, the coursework will include

exercises and a group project in which

students will use existing open data sets

and build their own application.

The course will cover the following concepts:

Fundamentals and core terminology

Technology pipeline and methods

Application scenarios and state of the art

Data collection (sampling, crawling)

Data analytics (statistical modeling, basic concepts, experiment design, pitfalls, R)

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Data interpretation and use

(visualization techniques, pitfalls,

D3)

High-performance computing

(parallel databases, MapReduce,

Hadoop, NoSQL)

Cloud computing (principles, architectures, existing technologies)

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