

# Management of Data Science and Business Workflows

## Titulaire

Dimitrios SACHARIDIS (Coordonnateur)

## Mnémonique du cours

INFO-H420

## Crédits ECTS

5 crédits

## Langue(s) d'enseignement

Anglais

## Période du cours

Premier quadrimestre

## Campus

Solbosch

## Contenu du cours

This course introduces basic concepts for managing workflows in data science applications and business processes. The first part of the course focuses on **business process management** and considers identification, modeling, analysis, simulation, redesign, and mining based on the Business Process Modeling and Notation (BPMN) workflow language. The second part focuses on **data science workflows** and discusses modeling, execution, and optimization, and also introduces various topics on **responsible data science**.

During the course the students have to perform several workflow modeling and analysis assignments.

A high-level overview of the theoretical part of the course:

- › Business Process Management
  - › Short overview of business processes and the need to manage them.
  - › Describing business processes, modeling the control flow, data and resource perspectives.
  - › Analysis of business processes, qualitatively and quantitatively.
  - › Redesign of business processes.
  - › Mining Process Logs.
- › Data Science Workflows
  - › Short overview of data science workflows.
  - › Describing workflows in data science.
  - › Analysis and optimization of data science workflows.
  - › Data privacy.
  - › Explainability of data science workflows.
  - › Bias and fairness in data science workflows.

## Objectifs (et/ou acquis d'apprentissages spécifiques)

At the end of the course students are able to:

- › Explain the business process management cycle.
- › Design a formal model of the business process based on an informal description.
- › Identify opportunities for optimizing business processes.
- › Describe data science workflows.
- › Identify the costs associated with executing data science workflows.
- › Optimize data science workflows.
- › Identify concerns about data privacy and bias.
- › Propose techniques to increase the explainability of data science workflows.

## Méthodes d'enseignement et activités d'apprentissages

- › Theory lectures (24h).
- › Exercises; both pen-and-paper and practical exercises (24h).
- › Four assignments to be realized in groups (12h).
- › Final Exam.

## Références, bibliographie et lectures recommandées

Course book (available through Cible+):

- › Dumas, La Rosa, Mendling & Reijers: Fundamentals of Business Process Management (second edition), Springer 2018

## Support(s) de cours

Université virtuelle

## Autres renseignements

## Lieu(x) d'enseignement

Solbosch

## Contact(s)

Prof. Dimitris Sacharidis <dimitris.sacharidis@ulb.be>

## Méthode(s) d'évaluation

Examen écrit et Travail pratique

## Examen écrit

Question fermée à Choix Multiple (QCM), Question fermée à Réponses Multiples (QRM) et Question fermée Vrai ou Faux (V/F)

Examen à livre ouvert

## Construction de la note (en ce compris, la pondération des notes partielles)

- > Four assignments (60%).
- > Final Exam (40%).

## Langue(s) d'évaluation principale(s)

Anglais

## Programmes

### Programmes proposant ce cours à l'école polytechnique de Bruxelles

MA-IREM | **Master : ingénieur civil électromécanicien** | finalité Operation engineering and management/bloc 1 et MA-IRIF | **Master : ingénieur civil en informatique** | finalité Spécialisée/bloc 1, finalité Spécialisée/bloc 2 et finalité Big Data Management and Analytics (Erasmus Mundus)/bloc 1

### Programmes proposant ce cours à la faculté des Sciences

MA-INFO | **Master en sciences informatiques** | finalité Spécialisée/bloc 2 et MA-SECU | **Master en cybersécurité** | finalité Erasmus Mundus joint master in Cybersecurity (CYBERUS)/bloc 2

