UCLouvain

llsmf2014

2020

Data Analytics applied in Business (Names from L to Z)

En raison de la crise du COVID-19, les informations ci-dessous sont susceptibles d'être modifiées, notamment celles qui concernent le mode d'enseignement (en présentiel, en distanciel ou sous un format comodal ou hybride).

5 crédits	30.0 h	Q2

Enseignants	Kolp Manuel ;Saerens Marco ;
Langue d'enseignement	Anglais
Lieu du cours	Louvain-la-Neuve
Thèmes abordés	Nowadays, data are everywhere. For most organizations, potentially every area of its business, as well as every relationship related to its business, can now be quantified and recorded. Such amount of data led to the emergence of powerful methods for storing, processing, querying, and extracting useful information/knowledge from these data. This course will be focused on methods for data understanding, design, management, preparation, modeling, querying, and visualization, as a global means for the organization of making better decisions. As a central element in data analytics, modeling and methodology will play an important role in this course, including, e.g., data design for business intelligence analytics, predictive modeling, or fitting statistical models to data.
Acquis d'apprentissage	**Having regard to the LO of the programme, this activity contributes to the development and acquisition of the following LO :** • Appliquer une démarche scientifique (3.1 à 3.5) • Gérer un projet (7.1 à 7.3) 1 **At the end of this course, students should be able to :** • Understand and evaluate the scope, the risks, and the opportunities of data analytics within a company; • Understand and apply the standard methods and methodologies, coming both from computer sciences and statistics, for managing, exploiting, and analyzing these data; • Extract useful information & knowledge supporting decision-making from these data; • Analyze and interpret the obtained analytical results. - - - - *La contribution de cette UE au développement et à la maîtrise des compétences et acquis du (des) programme(s) est accessible à la fin de cette fiche, dans la partie « Programmes/formations proposant cette unité d'enseignement (UE) ».*
Modes d'évaluation des acquis des étudiants	**En raison de la crise du COVID-19, les informations de cette rubrique sont particulièrement susceptibles d'être modifiées.** **Continuous evaluation:** • *Date: Will be specified later* • *Type of evaluation: Project with report* • *Comments: 60% of the final result* **Evaluation week:** • *Oral: No* • *Written: No* • *Unavailability or comments: No* **Examination session:** • *Oral: No* • *Written: Yes* • *Comments: 40% of the final result*
Méthodes d'enseignement	**En raison de la crise du COVID-19, les informations de cette rubrique sont particulièrement susceptibles d'être modifiées.** Classical courses (either on-site or remotely, depending on the situation) and case studies
Contenu	The scope of the course is broad and the instructor will certainly not be able to cover all of the material concerning data analytics in business. Depending of his background, interests and experience, he will focus on some specific techniques or skim through a broad range of methods. Potential covered topics are (but not limited to): database design for data analytics, business intelligence techniques, dimensionality reduction for data visualization, extracting recurrent patterns from data, cluster analysis, predictive modeling (supervised classification and regression methods), modeling relationships by latent variable

techniques, data analysis algorithms scaling to big data, etc. All these techniques will be illustrated through business applications.

Typically, these last years, the course was split into two parts: "Data management techniques" and "Machine learning techniques for supervised classification".

Bibliographie	**Potential sources:** • *Provost & Fawcett (2013), Data science for business. O Reilly.* • *Sherman (2014), Business intelligence guidebook: from data integration to analytics. Morgan Kaufmann.* • *Efraim, Sharda & Delen (2010), Decision support and business intelligence Systems. Pearson.* • *Leskovec, Rajaraman & Ullman (2014), Mining of massive datasets, 2nd ed. Cambridge University Press.* • *Kelleher, Mac Namee & D Arcy (2015), Fundamentals of machine learning for predictive data analytics. MIT Press.* • *Hastie, Tibshirani & Friedman (2009), The elements of statistical learning, 2nd ed. Springer-Verlag.* • *Izenman (2008), Modern multivariate statistical techniques: regression, classification, and manifold learning. Springer.* • *Bellanger & Tomassone (2014), Exploration de données et méthodes statistiques : data analysis & data mining avec le Logiciel R. Ellipses.*
Autres infos	Prerequisites : Bachelor in Business Engineering or at least : • A first course in programming • A first course in information systems analysis and design • A first course in multivariate calculus • A first course in linear algebra and matrix theory • A first course in probability and statistics (including maximum likelihood estimation) • A first course in multivariate statistical analysis
Faculté ou entité en charge:	CLSM

Programmes / formations proposant cette unité d'enseignement (UE)

Intitulé du programme	Sigle	Crédits	Prérequis	Acquis d'apprentissage
Master [120] en linguistique	LING2M	5		🔍
Master [120] : ingénieur de gestion	INGE2M	5		🔍
Approfondissement en sciences informatiques	APPSINF	5		🔍