

EM054M8K

Program

PGE
PGE 2A - SUPPLY CHAIN MANAGEMENT

UE

Big Data Analytics

Semester

B

Discipline

Quantitative methods / Statistics

Contact hours

27 H

Number of spots

45

ECTS

5

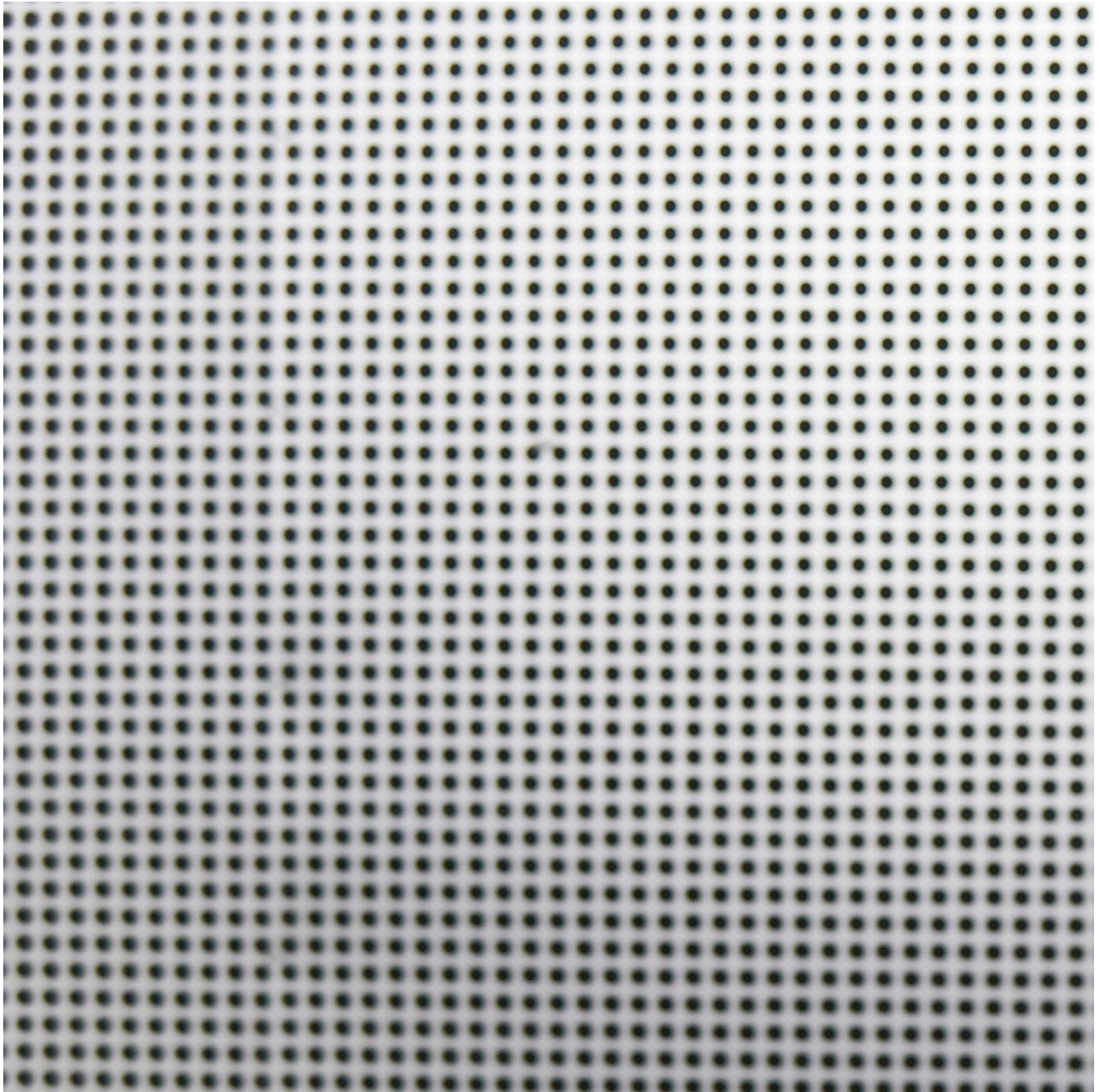
Open to visitors

Yes

Language



Coordinator



List of lecturers

Lecturer(s)	Email	Contact hours - lecture
Samia CHEHBI GAMOURA	samia.gamoura@em-strasbourg.eu	27 h

Pedagogical contribution of the course to the program

LEARNING GOAL 1 : Students will master state-of-the-art knowledge and tools in management fields in general, as well as in areas specific to the specialized field of management.

Students will understand state-of-the-art management concepts and tools and use them appropriately.

Students will implement appropriate methodologies to develop appropriate solutions for business issues.

Students will identify a business organization's operational and managerial challenges in a complex and evolving environment.

LEARNING GOAL 2 : Students will develop advanced-level managerial skills.

Students will work collaboratively in a team.

Students will participate in a decision-making process in a critical way.

Students will communicate ideas effectively, both orally and in writing, in a business context.

LEARNING GOAL 4: Students will study and work effectively in a multicultural and international environment.

Students will demonstrate written and oral competency in two foreign languages.

Students will analyze business organizations and problems in a multicultural and international environment

Description

The purpose of this course is to provide students with an overview of theoretical fundamentals and practical cases regarding the use of Big Data, Artificial Intelligence, Machine Learning, and Analytics in Business, Management, and organizations.

This course investigates the new Big Data and Analytics (Artificial Intelligence, Machine Learning, Business Intelligence, Business Object, etc.) in today's modern Management in business organizations. This course's set of knowledge will not be restricted to academic notions but covers a set of real-world challenging case studies, success, and fail stories in Data and AI use. The goal of this course is to offer hands-on applied experience in apprehending methodologies and solutions.

INTENDED OUTCOMES Upon successful completion of this course, students will be able to:

Understand the paradigm of Big Data and Analytics, and the related concepts such as Data sources, Artificial Intelligence, Internet of Things, Machine Learning, Business Intelligence, etc.,

Discover the approaches of analytics that are adapted by the organizations,

Research and use the concepts and trends underlying current and future methods of Big Data Analytics in Management of organizations,

Appraise management cases where managers are able to apply Big Data Analytics in order to facilitate decision making in Management,

Understand, control, plan, and evaluate a Big Data Project in Management with the use of Analytics.

Teaching methods

Face-to-face

- Lectures
- Tutorials

In group

- Exercises
- Oral presentations
- Projects

- Case studies/texts

Interaction

- Discussions/debates

Others

No items in this list have been checked.

Learning objectives

Cognitive domain

Upon completion of this course, students should be able to

- - (level 1) **acquire** acquire the main concepts about Data Analytics and Big Data Paradigm
 - - (level 1) **describe** Describe the main components of an enterprise information system based on Big Data
 - - (level 1) **memorize** Memorize the more used paradigms in Big Data that are used in business and enterprises
 - - (level 2) **illustrate** Illustrate the main concepts of Big Data and Artificial Intelligence in an enterprise (marketing, finance, HR, etc.)
 - - (level 3) **discover** Discover the new digitalized systems in enterprises including Big Data, Cloud computing, IoT, etc.
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Affective domain

Upon completion of this course, students should be able to

- - (level 1) **ask** Ask the right questions about the application of Big Data Systems in enterprises
 - - (level 2) **contribute** Contribute in proposing the more profitable systems that can fit with requirement of digitalized systems regarding Big Data
 - - (level 3) **debate** Debate the questions regarding the need of enterprises to apply or not Big Data systems
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Outline

Part 1: Big Data

Load (hours) 1.1. Data Concept 1

1.1.1. Data

1.1.2. Information

1.1.3. Knowledge

1.2. Big Data Concept 1

1.2.1. Volume

1.2.2. Variety

- 1.2.3. Velocity
- 1.2.4. Veracity
- 1.3. Big Data Life Cycle
 - 3 1.3.1. Data Acquisition
 - 1.3.1.1. Multi-Channels
 - 1.3.1.2. Internet of Things
 - 1.3.1.3. Cloud/Grid Computing
 - 1.3.2. Data Storage
 - 1.3.2.1. Data Base
 - 1.3.2.2. Data Warehouse
 - 1.3.2.3. Data Lake
 - 1.3.2.4. Data Security
- Part 2: Analytics
 - 2.1. Concept 1
 - 2.2. Types
 - 6 2.2.1. Traditional Analytics
 - 2.2.1.1. Business Intelligence (BI)
 - 2.2.1.2. Online Analytical Processing (OLAP)
 - 2.2.2. Advanced Analytics
 - 2.2.2.1. Artificial Intelligence
 - 2.2.2.2. Data Mining
 - 2.2.2.3. Machine Learning
 - 1. Supervised Learning Algorithms
 - 2. Unsupervised Learning Algorithms
 - 3. Reinforcement Learning Algorithms
 - 4. Ensemble Learning Algorithms
 - 5. Deep Learning Algorithms
- Part 3: Big Data Analytics
 - 3.1. Concept
 - 1 3.2. Role 1
 - 3.3. BDA As a field
 - 1 3.4. BDA architecture 1
 - 3.5. Big Data Analytics Life Cycle
 - 3 3.5.1. Data Processing
 - 3.5.1.1. Hadoop
 - 3.5.1.2. MapReduce
 - 3.5.2. Data Quality
 - 3.5.3. Data Visualization
 - 3.5.4. Data Compliance
 - 3.5.5. Data Preparation
 - 3.6. Big Data Analytics Project
 - 1 3.6.1. Business Value
 - 3.6.2. Data Features
 - 3.6.3. From Business Problem to Analytics Solution
 - 3.7. Organizational and Social Mutations
 - 1 3.9. Applications In Management: Real-world Case Studies (conditioned by the progress in the class) 4
 - 3.9.2. In Insurance: Prediction of Insurance Fraud
 - 3.9.4. In Transversal Management: Predictive Business Process Management
 - 3.9.6. In Supply Chain Management: Predictive Risk Management
 - 3.9.5. In Marketing: Chat bots, Marketing automation and Market Segmentation
 - 3.9.7. In CRM: Prediction of Customer Churn

No prerequisite has been provided

Knowledge in / Key concepts to master

Requires a background in information systems, basics in Management, enterprise systems, and MS Office tools such as MS Excel.

Teaching material

Mandatory tools for the course

- Computer
- Other : Videos (Youtube)

Documents in all formats

- Case studies/texts
- Worksheets

Moodle platform

- Upload of class documents
- Interface to submit coursework
- Assessments
- Coaching/mentoring

Software

No items in this list have been checked.

Additional electronic platforms

No items in this list have been checked.

Recommended reading

Main reading material

Book: 'Data Analytics Made Accessible'. 2018. by Anil Maheshwari

Book: 'Too Big to Ignore: The Business Case for Big Data'. by award-winning

Book: 'Data Smart: Using Data Science to Transform Information into Insight', by J. W. Foreman'.

Additional literature

Paper: 'Almeida, F. (2018). Big Data: Concept, Potentialities and Vulnerabilities'. Emerging Science Journal, 2(1).

McAfee, A., Brynjolfsson, E., Davenport, T. H., Patil, D. J., & Barton, D. (2012). Big data: the management revolution. Harvard business review, 90(10), 60-68.

Zikopoulos, P., & Eaton, C. (2011). Understanding big data: Analytics for enterprise class hadoop and streaming data. McGraw-Hill Osborne Media.

Kwon, O., Lee, N., & Shin, B. (2014). Data quality management, data usage experience and acquisition intention of big data analytics. International Journal of Information Management, 34(3), 387-394.

EM Research: Be sure to mobilize at least one resource

Textbooks, case studies, translated material, etc. can be entered

1. Chehbi-Gamoura, S., et al. (2020). Insights from big Data Analytics in supply chain management: an all-inclusive literature review using the SCOR model. *Production Planning & Control*, 31(5), 355-382.

2. Chehbi-Gamoura, S., et al. (2020). Cross-management of risks in big data-driven industries by the use of fuzzy cognitive maps. *Logistique & Management*, 28(2), 155-166.

3. Chehbi-Gamoura, S., and Malhotra M. (2020). Master Data-Supply Chain Management, the Key Lever for Collaborative and Compliant Partnerships in Big Data Era: Marketing/Sales Case Study. *Impacts and Challenges of Cloud Business Intelligence*, New York, USA, IGI Global, 72-101.

Assessment

List of assessment methods

Intermediate assessment / continuous assessment 1Other (date, pop quiz, etc.) : Automated tests individually at the end of each session a case study in groups at the 4th session

Written and oral (30 Min.) / Group / English / Weight : 30 %

Details : Automated tests individually at the end of each session a case study in groups at the 4th session

This evaluation is used to measure L01.1, L01.2, L01.3, L02.1, L02.2, L02.3, L04.1, L04.2

Final evaluationOther (date, pop quiz, etc.) : to submit after the last class

Written (120 Min.) / Individual / English / Weight : 70 %

Details : Written exam

This evaluation is used to measure L01.1, L01.2, L01.3, L02.3, L04.1, L04.2