

# Big Data Analytics (EM054M8K)

Program	PGE
Module / ECTS / Path / Specialisation	<b>Module :Big Data Analytics : 5 ECTS.</b> <ul style="list-style-type: none"><li>• MGA</li></ul>
Discipline	Supply Chain Management
Year	2019
Semester	B
Open for visitors	yes (5 ECTS)
Available places	40

## Coordinator

**SAMIA GAMOURA**

## Lecturers

Instructor	Population	Email
SAMIA GAMOURA		samia.gamoura@em-strasbourg.eu

## Course format

Working language :	English
Volume of contact hours :	27 h
Workload to be expected by the student :	108 h

## Course track

Track : Attendance

### "Attendance" track :

Attendance at lecture / tutorial classes and intermediate / final exams is mandatory. As evaluation of in class work constitutes an essential element of grading, any absence will be penalized and is taken into account for grading purposes (see academic rules and regulations).

### "Autonomous" track :

Attendance at intermediate / final exams is mandatory, but students are free to attend lecture / tutorial classes.

For all Master programs and all other programs realized in the form of dual internships (apprentissage), attendance at lecture / tutorial classes and intermediate / final exams is entirely mandatory. Therefore, only the "Attendance" track can be selected.

# Contribution of the course to the educational objectives of the programme

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How the course contributes to the programme :

## Description

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The purpose of this course is to provide students with an overview of theory fundamentals and practical cases regarding the use of Big Data and Analytics in management and organizations.

## Educational organisation

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In class

### Lectures

In groups

### Exercises

### Projects

### Case studies/texts

### Oral presentations

Interaction

### Discussions / debates

## Learning outcomes

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Upon completion of this course, students should be able to :

- **Identify** The paradigm of Big Data and Analytics, and the related concepts such as Data sources, Artificial Intelligence, Internet of Things, Machine Learning, Data Science, etc.,
- **Differentiate** management cases where managers are able to apply Big Data Analytics in order to facilitate decision making in management,
- **Acquire** The approaches of analytics that are adopted by the organizations,
- **Prepare** and use the concepts and trends underlying current and future methods of Big Data Analytics in the management of organizations,
- **Evaluate** , understand, control, and plan a Big Data Project in management with the use of Analytics.

## Outline

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1. Big Data
  - 1.1. Data Concept
    - 1.1.1. Data
    - 1.1.2. Information
    - 1.1.3. Knowledge
  - 1.2. Big Data Concept
    - 1.2.1. Volume
    - 1.2.2. Variety
    - 1.2.3. Velocity
    - 1.2.4. Veracity
  - 1.3. Big Data Life Cycle

- 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
- 2. Analytics
  - 2.1. Concept
  - 2.2. Types
    - 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
- 3. Big Data Analytics
  - 3.1. Concept
  - 3.2. Role
  - 3.3. As a field
  - 3.4. Technically
  - 3.5. Big Data Analytics Life Cycle
    - 3.5.1. Data Processing
      - 3.5.1.1. Hadoop
      - 3.5.1.2. MapReduce
    - 3.5.2. Data Quality
  - 3.6. Big Data Analytics Project
  - 3.7. Technological and Social Mutations
  - 3.8. In Management
    - 3.8.1. Applications
      - 3.8.1.1. Predictive Management
      - 3.8.1.2. Prediction in Unstructured BPM
      - 3.8.1.3. Marketing/Sales Compliance
      - 3.8.1.4. Supply Chain Advanced Risk Management
      - 3.8.1.5. Supply Chain Predictive Risk Management

## Prerequisites

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**Key concepts to understand :**

**Knowledge of :**

Required background in information systems and Management. In addition to notions in Data Bases

## Teaching material

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**Documents in all formats**

- Syllabus
- Worksheets

**Software**

- Office Pack (Word, Excel, PowerPoint, Access)

## Recommended reading

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**Major works :**

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

#### **Further reading :**

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.

#### **Research works by EM Strasbourg :**

- The data warehouse toolkit : the definitive guide to dimensional modeling (PEGE Library - EM Strasbourg)

## **Assessment**

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#### **Intermediate evaluation / continuous assessment 1 : session n°4**

written + oral (20 min) / in group / English / weighting : 30%

additional information : Practical Part (Mini-Project & rewarding) (PCS): 30% Practical mini-project by groups. Homework of 2 weeks. Mini-project on a real-world case study based on a visit/contact/interview with an enterprise employing Big Data Analytics. Preparation and defense through a presentation in class. 15min duration for the presentation and 5min for questions/answers. Proceeding by vote for evaluation.

**This evaluation serves to measure LO1.1, LO1.3**

#### **Final assessment : last session9**

written (180 min) / individual / English / weighting : 70%

additional information : Theoretical Part (Written Exam) (TWE): 70% Written exam with supervision in class. Duration of 180 minutes (last session). Theoretical and practical questions of real-world problems and case studies to resolve. Individual efforts.

**This evaluation serves to measure LO1.2, LO1.3**

## **Grounds for expulsion from classes**

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Such behaviors as...

**arriving late, leaving early or unannounced leaving of the classroom during class time**

**disruptive eating or drinking in class**

**using smartphones and laptops for non class-related purposes**

**reading non class-related documents**

**chatting on non class-related issues**

**showing disrespect towards lecturers**

... may lead to expulsion from classes.