

<b>COURSE CODE</b>	EM054M8K		
<b>CREDITS</b>	5 ECTS	<b>CONTACT HOURS</b>	27 HOURS
<b>PROFESSOR</b>	SAMIA CHEHBI GAMOURA, PH.D.		
<b>COURSE TITLE</b>	BIG DATA ANALYTICS (ONLINE FORMAT)		

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

**COURSE 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.

**COURSE OVERVIEW** 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.

#### EXAM ORGANIZATION

##### Practical Part Works (PPW): 30%

Practical knowledge tests performed online and case studies realized as homework are evaluated. The practical part represents the average score of evaluations.

##### Theoretical Written Exam (TWE): 70%

The written exam will be performed online during the last session. Duration of 120 minutes. It includes questions and problems to resolve. Individual efforts are required. During the written exam, no restrictions to access to documents and the Internet, but conversations, chats, and communications are forbidden.

<b>Final mark = (1/3 x PPW + 2/3 TWE)</b>
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**SCHEDULE WITH LOADS**

<b>Part 1: Big Data</b>		<b>Load (hours)</b>
<b>1.1. Data Concept</b>		<b>1</b>
1.1.1.	Data	
1.1.2.	Information	
1.1.3.	Knowledge	
<b>1.2. Big Data Concept</b>		<b>1</b>
1.2.1.	Volume	
1.2.2.	Variety	
1.2.3.	Velocity	
1.2.4.	Veracity	
<b>1.3. Big Data Life Cycle</b>		<b>3</b>
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	
<b>Part 2: Analytics</b>		
<b>2.1. Concept</b>		<b>1</b>
<b>2.2. Types</b>		<b>6</b>
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
<b>Part 3: Big Data Analytics</b>		
<b>3.1. Concept</b>		<b>1</b>
<b>3.2. Role</b>		<b>1</b>
<b>3.3. BDA As a field</b>		<b>1</b>
<b>3.4. BDA architecture</b>		<b>1</b>

<b>3.5. Big Data Analytics Life Cycle</b>		<b>3</b>
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		
<b>3.6. Big Data Analytics Project</b>		<b>1</b>
3.6.1. Business Value		
3.6.2. Data Features		
3.6.3. From Business Problem to Analytics Solution		
<b>3.7. Organizational and Social Mutations</b>		<b>1</b>
3.7.1. In Manufacturing management		
3.7.2. In Healthcare management		
3.7.3. In Marketing Management		
3.7.4. In Supply Chain Management		
3.7.5. In Purchasing Management		
<b>3.8. BDA and other technologies: (Blockchain, Additive, Augmented, etc.).</b>		<b>1</b>
<b>3.9. Applications In Management: Real-world Case Studies (conditioned by the progress in the class)</b>		<b>4</b>
3.9.1. In Finance: Prediction of Financial Fraud		
3.9.2. In Insurance: Prediction of Insurance Fraud		
3.9.3. In Purchasing: Negotiation and Smart Contracts		
3.9.4. In Transversal Management: Predictive Business Process Management		
3.9.5. In Marketing: Chat bots, Marketing automation and Market Segmentation		
3.9.6. In Supply Chain Management: Predictive Risk Management		
3.9.7. In CRM: Prediction of Customer Churn		
3.9.8. Supply Chain Predictive Risk Management		