



Título propio reconocido por:



UNIVERSITAT POLITÈCNICA  
DE CATALUNYA  
BARCELONATECH

# **GLOBAL EXECUTIVE MASTER IN BUSINESS ADMINISTRATION**

## **TEACHING GUIDE FOR APPLIED BUSINESS TECHNOLOGIES [2023-24]**

## GENERAL DETAILS

<b>Course name:</b>	APPLIED BUSINESS TECHNOLOGIES
<b>Academic year:</b>	2023-24
<b>Degree:</b>	Global Executive Master in Business Administration
<b>Number of credits (ECTS):</b>	8
<b>Date of latest revision:</b>	May 2023
<b>Lecturers in charge:</b>	Raul Sanchez Adell

### 1. GENERAL DESCRIPTION

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The course of Applied Business Technologies provides the student with a comprehensive vision of disruptive technologies and their impact on traditional businesses. Throughout the course, the student will acquire fundamental knowledge and skills to adapt to the digital paradigm and take advantage of the opportunities it offers.

During the course, the impact of disruptive technologies in traditional sectors will be explored and it will be understood how these technologies relate to each other to generate innovative use cases. Enablers such as 5G, the Internet of Things (IoT), artificial intelligence, among others, will be addressed and their impact on different business sectors will be analyzed. The student will gain a panoramic view of these trends and understand their potential impact on business.

In addition, students will study how digitalization is transforming value chains, the value proposition of companies and the way products are developed. The student will analyze different models of implementation of these trends in organizations, which will provide a clear understanding of how to strategically deploy digitalization in your company.

The course will also address the use of artificial intelligence tools in the different departments of a company. The student will learn how these tools can improve productivity in areas such as design, web development, marketing, and operations, without requiring large investments. In addition, ethical and practical considerations in the use of these tools in the business environment will be analyzed.

In terms of information security and cybersecurity, knowledge and skills will be provided to protect corporate systems and networks, manage risks, comply with regulations, and respond to security incidents. Real examples of cyber-attacks will be presented to understand protection measures and vulnerabilities.

Business Intelligence and data analysis as a key tool in business decision making will also be addressed. The student will learn to identify and collect relevant data sources, integrate data from different sources and use visualization tools to create interactive reports. Practical exercises will be carried out to apply this knowledge in practical situations.

At the end of the Applied Business Technologies course, students will be prepared to face the challenges of the digital paradigm, apply disruptive technologies in their organization, protect information, use artificial intelligence tools and take advantage of the potential of data analysis for business decision making.

## 2. OBJECTIVES

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- Acquire a comprehensive understanding of disruptive technologies and their impact on traditional businesses.
- Understand and analyze how disruptive technologies relate to each other to generate innovative use cases and their impact on different business sectors.
- Study the digital transformation of value chains, the value proposition of companies and product development.
- Explore the use of artificial intelligence tools in different departments of a company to improve productivity.
- Assess ethical and practical considerations in the use of these tools in the business environment.
- Obtain a panoramic view of relevant technology trends in the business world and understand their potential impact on business.
- Develop knowledge and skills in information security and cybersecurity to protect enterprise systems and networks.
- Use Business Intelligence and data analysis as key tools in business decision making.
- Learn to identify relevant data sources, integrate data from different sources and use visualization tools to create interactive reports.
- Prepare to face the challenges of the digital paradigm, apply disruptive technologies, protect information and use artificial intelligence tools in your organization.

### 3. CONTENTS

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UNIT I. DIGITALIZATION OF THE COMPANY

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UNIT II. TECHNOLOGICAL TOOLS APPLIED TO COMPANIES

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UNIT III. INFORMATION AND SECURITY

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UNIT IV. DATA ANALYTICS

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#### UNIT I. DIGITALIZATION OF THE COMPANY

##### Learning outcomes

After studying the topics in the unit and completing exercises, the student will be able to:

- Identify the technologies that make up the context of the so-called fourth industrial revolution and how they relate to each other to enable new use cases with a high impact on traditional sectors.
- Distinguish how the democratization of disruptive technologies is impacting the way value chains are configured, the value proposition of companies, the channels they use or how they develop their products.

#### TOPIC 1. DIGITAL PARADIGM: IMPACT ON TRADITIONAL BUSINESSES

##### Content

- 1.1 Context and enablers of the democratization of disruptive technologies.
- 1.2 Technologies shaping the context of the Fourth Industrial Revolution: 5G/New Space, Cloud Computing, IoT, Big Data, AI, Robotics, Blockchain, Metaverse and Xreality.

#### TOPIC 2. DIGITIZATION

##### Content

- 2.1 The company facing the new scenario of digitalization.
- 2.2 Disruptions and trends generated by digitalization.
- 2.3 Models of implementation of these trends in organizations.

## UNIT II. TECHNOLOGICAL TOOLS APPLIED TO COMPANIES

### Learning outcomes

After studying the topics in the unit and completing exercises, the student will be able to:

- Discover different artificial intelligence tools that can be applied by companies in their respective departments.
- Use tools that can easily boost productivity in areas such as marketing and operations without having to make large investments.
- Explore the most relevant technological trends that are impacting the business world and society in general.
- Discover significant advances and changes in areas such as Artificial Intelligence, Internet of Things, Virtual Reality, Blockchain, Cloud Computing and other emerging technologies.
- To have a panoramic view of current technological trends and their potential impact on different sectors and business areas.

### TOPIC 3. ARTIFICIAL INTELLIGENCE TOOLS

#### Content

- 3.1 History of Artificial Intelligence.
- 3.2 The beginnings of ChatGPT and Bard.
- 3.3 Artificial Intelligence applied to business and its relevance in specific departments.
- 3.4 Artificial Intelligence tools applied in different areas of the company.

### TOPIC 4. TECHNOLOGY TRENDS

#### Content

- 4.1 Internet of Things (IoT) and its impact on connectivity and data collection.
- 4.2 Virtual and Augmented Reality: Business use and creative possibilities.
- 4.3 Blockchain and its applications in security, transparency and trust.
- 4.4 Cloud Computing and Cloud Services: Benefits and enterprise adoption.

## UNIT III. INFORMATION AND SECURITY

### Learning outcomes

After studying the topics in the unit and completing exercises, the student will be able to:

- Learn how to protect information in companies.
- Ensuring the security of systems and networks, as well as understanding the necessary risk management and regulatory compliance.
- Know the procedures to mitigate cyber threats and attacks using security tools.
- Have the minimum necessary knowledge of information protection in artificial intelligence, cryptography to ensure data confidentiality, cloud security and data centers.

### TOPIC 5. INFORMATION PROTECTION IN COMPANIES

#### Content

- 5.1 Importance of security in companies.
- 5.2 Risk Management and Regulatory Compliance.
- 5.3 Protection of Systems and Networks.
- 5.4 Security Assessment and Penetration Testing.
- 5.5 Malware Analysis and Incident Response.
- 5.6 Real example of a Cyber-Attack on a company.

### TOPIC 6. SECURITY IN ADVANCED TECHNOLOGIES AND CYBERSECURITY

#### Content

- 6.1 Security in Advanced Technologies and Cybersecurity.
- 6.2 Information protection in Artificial Intelligence.
- 6.3 Importance of Cryptography in Data Security.
- 6.4 Cloud Security and Data Centers.
- 6.5 Secure Software Development.
- 6.6 Security Awareness.

## UNIT IV. DATA ANALYTICS

### Learning outcomes

After studying the topics in the unit and completing exercises, the student will be able to:

- Acquire a set of key knowledge to understand and apply Business Intelligence in the business environment.
- Learn to identify and collect relevant data sources, as well as to integrate data from different sources.
- Explore data warehousing, understanding how to design and structure an effective data warehouse.
- Identify data processing and analysis techniques, including extraction, transformation, and loading (ETL).
- Use popular BI tools to visualize data and create interactive reports.

### TOPIC 7. BUSINESS INTELLIGENCE

#### Content

7.1 The importance of Business Intelligence (BI)

7.2 Key components of Business Intelligence (BI)

## 4. TEACHING AND LEARNING METHODOLOGY

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The Global Executive Master in Business Administration (GEMBA) is organized in such a way that students can acquire knowledge from different subjects, apply it in practice, and develop a proactive attitude and critical thinking towards them.

The virtual program offers a flexible and progressive curriculum that allows participants to choose their learning pace. Due to this, the teaching methodologies employed are:

**LEARNING RESOURCES.** This space provides the main materials for each subject, as well as other sources of information relevant to the study. While each student sets their own study pace, a suggested timeline is provided to adequately follow the assessment established for the subject.

**MICRO LEARNING.** Audiovisual materials that introduce, complement, or expand on key concepts in a simple and practical manner.

**LEARNING CHALLENGES | LEARNING BY DOING.** Learning oriented towards solving real practical cases that encourage the practical application of theoretical content covered in different blocks of each subject. The resolution of these business scenarios is presented to verify that the objectives of the subject have been achieved.

**FORUM.** A consultation space for students to clarify any concepts that may not have been clear during individual study or work on the subject.

**DEBATES.** A discussion space promoted by the faculty to comment on current topics.

**MASTERCLASS.** Sessions delivered in streaming format by expert professionals, aimed at delving into specific topics within the business field, applying theoretical knowledge to practical situations, and promoting learning.

## 5. ASSESSMENT

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The Global Executive Master in Business Administration is based on a competency-based assessment model, in which the student's progress in achieving the objectives set in the master's program is evaluated. It relies on validating the knowledge acquired through tests and learning challenges.

- **TESTS.** At the end of each unit corresponding to a course, the student will demonstrate the assimilation of the contents by completing a multiple-choice test.
- **LEARNING CHALLENGES.** This involves the analysis, reflection, and resolution of real practical cases individually, contributing to business decision-making. The situations presented aim to contextualize the training activities and are based on competencies and learning outcomes to be achieved.

The final grade for each course is obtained by adding the arithmetic mean of the scores from the tests and learning challenges. The grade will be expressed, for each student, on the following scale, with the corresponding qualitative grade mention:

- 0-49: Fail
- 50-69: Pass
- 70-89: Good
- 90-100: Excellence/ Distinction



Failing a course prevents the attainment of the Master's degree; therefore, the student must re-enroll in that subject.

## 6. BIBLIOGRAPHY

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### 6.1. BASIC BIBLIOGRAPHY

- Abdula, M., Averdunk, I., Barcia, R., Brown, K., Emuchay, N., Ionescu, P., Petri, G., Stienhans, F., & Mell, P. (2018). *The Cloud Adoption Playbook: Proven Strategies for Transforming Your Organization with the Cloud*. Wiley. ISBN: 978-1119491811
- Bostrom, N. (2014). *Superintelligence: Paths, Dangers, Strategies*. ISBN: 978-0198739838
- Bostrom, N. (2017). *Life 3.0: Being Human in the Age of Artificial Intelligence*. ISBN: 978-1101946596
- Drescher, D. (2018). *Blockchain Basics: A Non-Technical Introduction in 25 Steps*. Apress. ISBN: 978-1484226032
- Ellis, S., & Brown, M. (2017). *Hacking Growth: How Today's Fastest-Growing Companies Drive Breakout Success*. Crown Business. ISBN: 978-0451497215
- Gladwell, M. (2000). *The Tipping Point: How Little Things Can Make a Big Difference*. ISBN: 978-0316346627
- Glass, R., & Callahan, S. (2015). *The Big Data-Driven Business: How to Use Big Data to Win Customers, Beat Competitors, and Boost Profits*. Wiley. ISBN: 978-1118889800
- Kai-Fu, L. (2018). *AI Superpowers: China, Silicon Valley, and the New World Order*. ISBN: 978-1328546395
- Müller, V. C. (Ed.) (2020). *Ethics of Artificial Intelligence and Robotics*. Stanford University Press. ISBN: 978-1503610060
- Ross, A. (2017). *The Industries of the Future*. Simon & Schuster. ISBN: 978-1476753652
- Russell, S., & Norvig, P. (2021). *Artificial Intelligence: A Modern Approach*. Pearson. ISBN: 978-0134610993
- Schwab, K. (2017). *The Fourth Industrial Revolution*. Penguin. ISBN: 978-1524758868

## 6.2. WEBGRAPHY

- Gartner (n. d.). Retrieved from <https://www.gartner.com/en>
- Harvard Business Review (n. d.). Retrieved from <https://hbr.org/>
- IEEE Spectrum (n. d.). Retrieved from <https://spectrum.ieee.org/>
- MIT Technology Review (n. d.). Retrieved from <https://www.technologyreview.com/>
- McKinsey Digital (n. d.). Retrieved from <https://www.mckinsey.com/business-functions/mckinsey-digital>
- National Institute of Standards and Technology (NIST). (n. d.). Retrieved from <https://www.nist.gov/>
- OpenAI Blog (n. d.). Retrieved from <https://openai.com/blog/>
- OWASP (Open Web Application Security Project) (n. d.). Retrieved from <https://owasp.org/>
- Power BI Community (n. d.). Retrieved from <https://community.powerbi.com/>
- Qlik Community (n. d.). Retrieved from <https://community.qlik.com/>
- SANS Institute (n. d.). Retrieved from <https://www.sans.org/>
- Tableau Public Gallery (n. d.). Retrieved from <https://public.tableau.com/en-us/gallery>
- Towards Data Science (n. d.). Retrieved from <https://towardsdatascience.com/>
- World Economic Forum (n. d.). Retrieved from <https://www.weforum.org/>

## 6.3. AUDIOVISUALS

- Garland, A. (Director) (2014). Ex Machina [Motion Picture]. Universal Pictures.
- Fincher, D. (Director) (2010). The Social Network [Film]. Columbia Pictures.
- Jonze, S. (Director) (2013). Her [Film]. Warner Bros. Pictures.
- McKay, A. (Director). (2015). The Big Short [Film]. Paramount Pictures.
- Ponsoldt, J. (Director). (2017). The Circle [Film]. EuropaCorp.
- Spielberg, S. (Director) (2002). Minority Report [Film]. 20th Century Fox.
- Stone, O. (Director). (2016). Snowden [Film]. Open Road Films.
- The Wachowskis (Directors) (1999). The Matrix [Motion Picture]. Warner Bros. Pictures.