

Advanced Master's Degree MBA in Artificial Intelligence in Education

A M D M B A A I E



Advanced Master's Degree MBA in Artificial Intelligence in Education

- » Modality: online
- » Duration: 2 years
- » Certificate: TECH Global University
- » Accreditation: 120 ECTS
- » Schedule: at your own pace
- » Exams: online

Website: www.techtute.com/us/business-school/grand-master/grand-master-mba-artificial-intelligence-education

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01 Welcome

The use of Artificial Intelligence in education is emerging as a powerful tool for transforming learning methods around the world. So much so that a recent survey reveals that 65% of respondents in 29 countries believe that teachers should receive specialization on how to use this branch of technology in their educational strategies. Among the benefits of these systems is their ability to detect learning problems at an early stage. In this way, educators provide personalized and preventive support to help students overcome academic obstacles. For this reason, TECH is launching a university program that will delve into the development of Artificial Intelligence projects in the classroom. In addition, it is delivered in a flexible 100% online modality.



MBA in Artificial Intelligence in Education
TECH Global University



“

Thanks to this 100% online Advanced Master's Degree, you will use Artificial Intelligence to make informed decisions about educational policies, support interventions and student achievement assessment”

02

Why Study at TECH?

TECH is the world's largest 100% online business school. It is an elite business school, with a model based on the highest academic standards. A world-class center for intensive managerial skills education.



“

TECH is a university at the forefront of technology, and puts all its resources at the student's disposal to help them achieve entrepreneurial success"

At TECH Global University



Innovation

The university offers an online learning model that balances the latest educational technology with the most rigorous teaching methods. A unique method with the highest international recognition that will provide students with the keys to develop in a rapidly-evolving world, where innovation must be every entrepreneur's focus.

"*Microsoft Europe Success Story*", for integrating the innovative, interactive multi-video system.



The Highest Standards

Admissions criteria at TECH are not economic. Students don't need to make a large investment to study at this university. However, in order to obtain a qualification from TECH, the student's intelligence and ability will be tested to their limits. The institution's academic standards are exceptionally high...

95% | of TECH students successfully complete their studies



Networking

Professionals from countries all over the world attend TECH, allowing students to establish a large network of contacts that may prove useful to them in the future.

+100000

executives prepared each year

+200

different nationalities



Empowerment

Students will grow hand in hand with the best companies and highly regarded and influential professionals. TECH has developed strategic partnerships and a valuable network of contacts with major economic players in 7 continents.

+500

collaborative agreements with leading companies



Talent

This program is a unique initiative to allow students to showcase their talent in the business world. An opportunity that will allow them to voice their concerns and share their business vision.

After completing this program, TECH helps students show the world their talent.



Multicultural Context

While studying at TECH, students will enjoy a unique experience. Study in a multicultural context. In a program with a global vision, through which students can learn about the operating methods in different parts of the world, and gather the latest information that best adapts to their business idea.

TECH students represent more than 200 different nationalities.

TECH strives for excellence and, to this end, boasts a series of characteristics that make this university unique:



Analysis

TECH explores the student's critical side, their ability to question things, their problem-solving skills, as well as their interpersonal skills.



Academic Excellence

TECH offers students the best online learning methodology. The university combines the Relearning method (postgraduate learning methodology with the best international valuation) with the Case Study. Tradition and vanguard in a difficult balance, and in the context of the most demanding educational itinerary.



Economy of Scale

TECH is the world's largest online university. It currently boasts a portfolio of more than 10,000 university postgraduate programs. And in today's new economy, **volume + technology = a groundbreaking price**. This way, TECH ensures that studying is not as expensive for students as it would be at another university.



Learn with the best

In the classroom, TECH's teaching staff discuss how they have achieved success in their companies, working in a real, lively, and dynamic context. Teachers who are fully committed to offering a quality specialization that will allow students to advance in their career and stand out in the business world.

Teachers representing 20 different nationalities.



At TECH, you will have access to the most rigorous and up-to-date case analyses in academia"

03

Why Our Program?

Studying this TECH program means increasing the chances of achieving professional success in senior business management.

It is a challenge that demands effort and dedication, but it opens the door to a promising future. Students will learn from the best teaching staff and with the most flexible and innovative educational methodology.



“

We have highly qualified teachers and the most complete syllabus on the market, which allows us to offer you education of the highest academic level”

This program will provide you with a multitude of professional and personal advantages, among which we highlight the following:

01

A Strong Boost to Your Career

By studying at TECH, students will be able to take control of their future and develop their full potential. By completing this program, students will acquire the skills required to make a positive change in their career in a short period of time.

70% of students achieve positive career development in less than 2 years.

02

Develop a strategic and global vision of the company

TECH offers an in-depth overview of general management to understand how each decision affects each of the company's different functional fields.

Our global vision of companies will improve your strategic vision.

03

Consolidate the student's senior management skills

Studying at TECH means opening the doors to a wide range of professional opportunities for students to position themselves as senior executives, with a broad vision of the international environment.

You will work on more than 100 real senior management cases.

04

You will take on new responsibilities

The program will cover the latest trends, advances and strategies, so that students can carry out their professional work in a changing environment.

45% of graduates are promoted internally.

05

Access to a powerful network of contacts

TECH connects its students to maximize opportunities. Students with the same concerns and desire to grow. Therefore, partnerships, customers or suppliers can be shared.

You will find a network of contacts that will be instrumental for professional development.

06

Thoroughly develop business projects.

Students will acquire a deep strategic vision that will help them develop their own project, taking into account the different fields in companies.

20% of our students develop their own business idea.

07

Improve soft skills and management skills

TECH helps students apply and develop the knowledge they have acquired, while improving their interpersonal skills in order to become leaders who make a difference.

Improve your communication and leadership skills and enhance your career.

08

You will be part of an exclusive community

Students will be part of a community of elite executives, large companies, renowned institutions, and qualified teachers from the most prestigious universities in the world: the TECH Global University community.

We give you the opportunity to study with a team of world-renowned teachers.

04 Objectives

Thanks to this university program, professionals will have a solid understanding of how to implement Artificial Intelligence techniques in the field of education. In this way, they will effectively handle tools ranging from Machine Learning to Natural Language Processing or Computer Vision. This will allow them to carry out innovative solutions to improve student learning and adapt it according to their individual difficulties. Therefore, graduates will develop new approaches with which they will excel in the educational field.



“

You will lead innovative projects related to the implementation of Artificial Intelligence in educational environments, being able to personalize the teaching processes”

TECH makes the goals of their students their own goals too
Working together to achieve them

The **MBA in Artificial Intelligence in Education** will enable students to:

01

Define the latest trends in business management, taking into account the globalized environment that governs senior management criteria

04

Develop strategies to carry out decision-making in a complex and unstable environment

02

Develop the key leadership skills that should define working professionals

03

Delve into the sustainability criteria set by international standards when developing a business plan

05

Encourage the creation of corporate strategies that set the script for the company to follow in order to be more competitive and achieve its own objectives



06

Differentiate the skills required to manage business activities strategically

08

Design innovative strategies and policies to improve management and business efficiency

09

Understand the best way to manage the company's human resources, getting greater performance from employees that, in turn, increases the company's profits

07

Work more effectively, more agile and more aligned with today's new technologies and tools

10

Acquire the communication skills that a business leader needs in order to ensure that their message is heard and understood by the members of their community



11

Clarify the economic environment in which the company operates and develop appropriate strategies to anticipate changes

14

Carry out the marketing strategy that allows to make the product known to potential clients and to generate an adequate image of the company

12

Be able to manage the company's economic and financial plan



13

Apply information and communication technologies to the different areas of the company

15

Be able to develop all the phases of a business idea: design, feasibility plan, execution, monitoring

16

Address workload distribution mechanisms of shared resources among several projects

18

Establish the appropriate guidelines for the company's adaptation to the changing society

19

Propose a dynamic business model that supports its growth in intangible resources

17

Create innovative strategies in line with different projects

20

Understand the theoretical foundations of Artificial Intelligence

21

Study the different types of data and understand the data life cycle

24

Explore the theoretical basis of neural networks for Deep Learning development

22

Evaluate the crucial role of data in the development and implementation of AI solutions



23

Explore the theoretical basis of neural networks for Deep Learning development

25

Analyze bio-inspired computing and its relevance in the development of intelligent systems

26

Understand the fundamental ethical principles related to the application of AI in educational settings

28

Encourage the responsible design and use of AI solutions in educational contexts, considering cultural diversity and gender equity

29

Provide an in-depth understanding of the theoretical foundations of AI, including machine learning, neural networks, and natural language processing

27

Analyze the current legislative framework and the challenges associated with the implementation of AI in educational settings

30

Understand the applications and impact of AI in teaching and learning, critically assessing its current and potential uses



05 Skills

Through this Advanced Master's Degree, graduates will acquire skills to develop and design educational systems that use Artificial Intelligence to optimize teaching. In this sense, professionals will implement intelligent algorithms in educational environments, which will allow them to analyze data and predict academic results. In addition, they will use these technologies to solve problems such as recommendation systems, intelligent tutoring and plagiarism detection.



A grayscale photograph of a hand pointing at a bar chart on a document. The chart has three bars of increasing height. The text 'profit trend' is visible on the document. The image is partially obscured by a dark blue diagonal overlay.

“

A 100% online program that will amplify your professional resume with a double university degree, if you meet the official access requirements"

01

Resolve business conflicts and problems between workers

02

Apply lean management methodologies

03

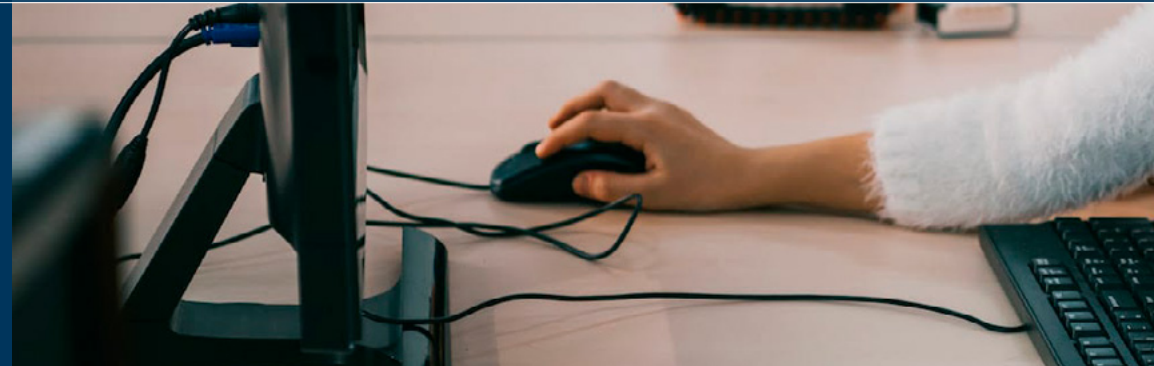
Correctly manage teams to improve productivity and, therefore, the company's profits

04

Exercise economic and financial control of a company

05

Manage tools and methods for the manipulation and better utilization of data, for the delivery of understandable results to the final recipient



06

Control the company's logistics processes, as well as purchasing and procurement

08

Implement the keys to successful R+D+I management in organizations

09

Apply the most appropriate strategies to support e-commerce of the company's products

07

Delve into the new business models associated with information systems

10

Develop and lead marketing plans



11

Develop metrics of goal achievement associated with a digital marketing strategy and analyze them in digital dashboards

14

Commit to sustainably developing the company, avoiding environmental impacts

12

Focus on innovation in all processes and areas of the company

13

Lead the different projects of the company, from defining when to prioritize and delay their development within an organization

15

Master data mining techniques, including complex data selection, preprocessing and transformation



16

Design and develop intelligent systems capable of learning and adapting to changing environments

18

Employ Autoencoders, GANs and Diffusion Models to solve specific challenges in Artificial Intelligence

19

Implement an encoder-decoder network for neural machine translation

17

Control machine learning tools and their application in data mining for decision making

20

Apply the fundamental principles of neural networks in solving specific problems

21

Use AI tools, platforms and techniques from data analysis to the application of neural networks and predictive modeling

22

Develop critical skills to evaluate the ethical and social impact of AI in education





23

Train in the design and implementation of AI projects in the educational environment

24

Develop skills to integrate AI projects effectively and ethically into the educational syllabus

06

Structure and Content

This academic pathway will provide students with a mastery of the most advanced tools in Artificial Intelligence in the educational context. By means of 30 complete modules, the program will address issues such as Machine Learning, Neural Networks or Natural Language Processing. In this way, graduates will have within their reach the most innovative techniques in each technological area. Likewise, the didactic materials will offer students cutting-edge strategies to personalize the educational experience, taking into account learning difficulties based on data analysis.



“

You will have access to the multimedia resource library and the entire syllabus from day one. You will update your knowledge at your own pace!”

Syllabus

The MBA in Artificial Intelligence in Education at TECH Global University is an intensive program that prepares students to face challenges and business decisions both nationally and internationally. Its content is designed to promote the development of managerial skills that enable more rigorous decision-making in uncertain environments.

Students will analyze a multitude of practical cases through individual work, achieving high quality learning that they will be able to apply to their daily practice. It is, therefore, an authentic immersion in real business situations.

This program deals in depth with the main areas of Artificial Intelligence so that educators understand its applications from a strategic, international and innovative perspective.

A plan designed for students, focused on their professional improvement and that prepares them to achieve excellence in the field of education. A program that understands their needs and those of their company through innovative content based on the latest trends, and supported by the best educational methodology and an exceptional faculty, which will provide them with the competencies to solve critical situations in a creative and efficient way.

This program takes place over 24 months and is divided into 30 modules:

Module 1	Leadership, Ethics and Social Responsibility in Companies
Module 2	Strategic Management and Executive Management
Module 3	People and Talent Management
Module 4	Economic and Financial Management
Module 5	Operations and Logistics Management
Module 6	Information Systems Management
Module 7	Commercial Management, Strategic Marketing and Corporate Communications
Module 8	Market Research, Advertising and Commercial Management
Module 9	Innovation and Project Management
Module 10	Executive Management
Module 11	Fundamentals of Artificial Intelligence
Module 12	Data Types and Life Cycle
Module 13	Data in Artificial Intelligence
Module 14	Data Mining: Selection, Pre-Processing and Transformation
Module 15	Algorithm and Complexity in Artificial Intelligence

Module 16	Intelligent Systems
Module 17	Machine Learning and Data Mining
Module 18	Neural Networks, the Basis of Deep Learning
Module 19	Deep Neural Networks Training
Module 20	Model Customization and Training with TensorFlow
Module 21	Deep Computer Vision with Convolutional Neural Networks
Module 22	Natural Language Processing (NLP) with Recurrent Neural Networks (RNN) and Attention
Module 23	Autoencoders, GANs and Diffusion Models
Module 24	Bio-Inspired Computing
Module 25	Artificial Intelligence: Strategies and Applications
Module 26	Data Analysis and Application of AI Techniques for Educational Personalization
Module 27	Development of Artificial Intelligence Projects in the Classroom
Module 28	Teaching Practice with Generative Artificial Intelligence
Module 29	Innovations and Emerging Trends in AI for Education
Module 30	Ethics and Legislation of Artificial Intelligence in Education

Where, When and How is it Taught?

TECH offers the possibility of developing this MBA in Artificial Intelligence in Education completely online. Throughout the 24 months of the educational program, the students will be able to access all the contents of this program at any time, allowing them to self-manage their study time.

A unique, key, and decisive educational experience to boost your professional development and make the definitive leap.

Module 1. Leadership, Ethics and Social Responsibility in Companies

1.1. Globalization and Governance

- 1.1.1. Governance and Corporate Governance
- 1.1.2. The Fundamentals of Corporate Governance in Companies
- 1.1.3. The Role of the Board of Directors in the Corporate Governance Framework

1.2. Leadership

- 1.2.1. Leadership. A Conceptual Approach
- 1.2.2. Leadership in Companies
- 1.2.3. The Importance of Leaders in Business Management

1.3. Cross Cultural Management

- 1.3.1. Cross Cultural Management Concept
- 1.3.2. Contributions to the Knowledge of National Cultures
- 1.3.3. Diversity Management

1.4. Management and Leadership Development

- 1.4.1. Concept of Management Development
- 1.4.2. Concept of Leadership
- 1.4.3. Leadership Theories
- 1.4.4. Leadership Styles
- 1.4.5. Intelligence in Leadership
- 1.4.6. The Challenges of Today's Leader

1.5. Business Ethics

- 1.5.1. Ethics and Morality
- 1.5.2. Business Ethics
- 1.5.3. Leadership and Ethics in Companies

1.6. Sustainability

- 1.6.1. Sustainability and Sustainable Development
- 1.6.2. The 2030 Agenda
- 1.6.3. Sustainable Companies

1.7. Corporate Social Responsibility

- 1.7.1. International Dimensions of Corporate Social Responsibility
- 1.7.2. Implementing Corporate Social Responsibility
- 1.7.3. The Impact and Measurement of Corporate Social Responsibility

1.8. Responsible Management Systems and Tools

- 1.8.1. CSR: Corporate Social Responsibility
- 1.8.2. Essential Aspects for Implementing a Responsible Management Strategy
- 1.8.3. Steps for the Implementation of a Corporate Social Responsibility Management System
- 1.8.4. CSR Tools and Standards

1.9. Multinationals and Human Rights

- 1.9.1. Globalization, Multinational Companies and Human Rights
- 1.9.2. Multinational Companies vs. International Law
- 1.9.3. Legal Instruments for Multinationals in the Area of Human Rights

1.10. Legal Environment and

- 1.10.1. International Rules on Importation and Exportation
- 1.10.2. Intellectual and Industrial Property
- 1.10.3. International Labor Law

Module 2. Strategic Management and Executive Management
2.1. Organizational Analysis and Design

- 2.1.1. Conceptual Framework
- 2.1.2. Key Elements in Organizational Design
- 2.1.3. Basic Organizational Models
- 2.1.4. Organizational Design: Typologies

2.2. Corporate Strategy

- 2.2.1. Competitive Corporate Strategy
- 2.2.2. Types of Growth Strategies
- 2.2.3. Conceptual Framework

2.3. Strategic Planning and Strategy Formulation

- 2.3.1. Conceptual Framework
- 2.3.2. Elements of Strategic Planning
- 2.3.3. Strategy Formulation: Strategic Planning Process

2.4. Strategic Thinking

- 2.4.1. The Company as a System
- 2.4.2. Organization Concept

2.5. Financial Diagnosis

- 2.5.1. Concept of Financial Diagnosis
- 2.5.2. Stages of Financial Diagnosis
- 2.5.3. Assessment Methods for Financial Diagnosis

2.6. Planning and Strategy

- 2.6.1. The Plan from a Strategy
- 2.6.2. Strategic Positioning
- 2.6.3. Strategy in Companies

2.7. Strategy Models and Patterns

- 2.7.1. Conceptual Framework
- 2.7.2. Strategic Models
- 2.7.3. Strategic Patterns: The Five P's of Strategy

2.8. Competitive Strategy

- 2.8.1. The Competitive Advantage
- 2.8.2. Choosing a Competitive Strategy
- 2.8.3. Strategies Based on the Strategic Clock Model
- 2.8.4. Types of Strategies According to the Industrial Sector Life Cycle

2.9. Strategic Management

- 2.9.1. The Concept of Strategy
- 2.9.2. The Process of Strategic Management
- 2.9.3. Approaches in Strategic Management

2.10. Strategy Implementation

- 2.10.1. Indicator Systems and Process Approach
- 2.10.2. Strategic Map
- 2.10.3. Strategic Alignment

2.11. Executive Management

- 2.11.1. Conceptual Framework of Executive Management
- 2.11.2. Executive Management The Role of the Board of Directors and Corporate Management Tools

2.12. Strategic Communication

- 2.12.1. Interpersonal Communication
- 2.12.2. Communication Skills and Influence
- 2.12.3. Internal Communication
- 2.12.4. Barriers to Business Communication

Module 3. People and Talent Management

3.1. Organizational Behavior

- 3.1.1. Organizational Behavior Conceptual Framework
- 3.1.2. Main Factors of Organizational Behavior

3.2. People in Organizations

- 3.2.1. Quality of Work Life and Psychological Well-Being
- 3.2.2. Work Teams and Meeting Management
- 3.2.3. Coaching and Team Management
- 3.2.4. Managing Equality and Diversity

3.3. Strategic People Management

- 3.3.1. Strategic Human Resources Management
- 3.3.2. Strategic People Management

3.4. Evolution of Resources. An Integrated Vision

- 3.4.1. The Importance of HR
- 3.4.2. A New Environment for People Management and Leadership
- 3.4.3. Strategic HR Management

3.5. Selection, Group Dynamics and HR Recruitment

- 3.5.1. Approach to Recruitment and Selection
- 3.5.2. Recruitment
- 3.5.3. The Selection Process

3.6. Human Resources Management by Competencies

- 3.6.1. Analysis of the Potential
- 3.6.2. Remuneration Policy
- 3.6.3. Career/Succession Planning

3.7. Performance Evaluation and Compliance Management

- 3.7.1. Performance Management
- 3.7.2. Performance Management: Objectives and Process

3.8. Training Management

- 3.8.1. Learning Theories
- 3.8.2. Talent Detection and Retention
- 3.8.3. Gamification and Talent Management
- 3.8.4. Training and Professional Obsolescence

3.9. Talent Management

- 3.9.1. Keys for Positive Management
- 3.9.2. Conceptual Origin of Talent and its Implication in the Company
- 3.9.3. Map of Talent in the Organization
- 3.9.4. Cost and Added Value

3.10. Innovation in Talent and People Management

- 3.10.1. Strategic Talent Management Models
- 3.10.2. Identification, Training and Development of Talent
- 3.10.3. Loyalty and Retention
- 3.10.4. Proactivity and Innovation

3.11. Motivation

- 3.11.1. The Nature of Motivation
- 3.11.2. Expectations Theory
- 3.11.3. Needs Theory
- 3.11.4. Motivation and Financial Compensation

3.12. Employer Branding

- 3.12.1. Employer Branding in HR
- 3.12.2. Personal Branding for HR Professionals

3.13. Coaching

- 3.13.1. Use of Coaching in the Personnel Development
- 3.13.2. Coaching Models and Scope
- 3.13.3. Coaching Schools
- 3.13.4. Action and Limits of Executive Coaching

3.14. Management Skills Development

- 3.14.1. What are Manager Competencies?
- 3.14.2. Elements of Competencies
- 3.14.3. Knowledge
- 3.14.4. Management Skills
- 3.14.5. Attitudes and Values in Managers
- 3.14.6. Managerial Skills

3.15. Time Management

- 3.15.1. Benefits
- 3.15.2. What Can be the Causes of Poor Time Management?
- 3.15.3. Time
- 3.15.4. Time Illusions
- 3.15.5. Attention and Memory
- 3.15.6. State of Mind
- 3.15.7. Time Management
- 3.15.8. Being Proactive
- 3.15.9. Be Clear About the Objective
- 3.15.10. Order
- 3.15.11. Planning

3.16. Change Management

- 3.16.1. Change Management
- 3.16.2. Type of Change Management Processes
- 3.16.3. Stages or Phases in the Change Management Process

3.17. Negotiation and Conflict Management

- 3.17.1. Negotiation
- 3.17.2. Conflict Management
- 3.17.3. Crisis Management

3.18. Executive Communication

- 3.18.1. Internal and External Communication in the Corporate Environment
- 3.18.2. Communication Departments
- 3.18.3. The Person in Charge of Communication of the Company. The Profile of the Dircom

3.19. Human Resources Management and PRL Teams

- 3.19.1. Management of Human Resources and Teams

3.20. Productivity, Attraction, Retention and Activation of Talent

- 3.20.1. Productivity
- 3.20.2. Talent Attraction and Retention Levers

3.21. Monetary Compensation Vs. Non-Cash

- 3.21.1. Monetary Compensation Vs. Non-Cash
- 3.21.2. Wage Band Models
- 3.21.3. Non-Cash Compensation Models
- 3.21.4. Working Model
- 3.21.5. Corporate Community
- 3.21.6. Company Image
- 3.21.7. Emotional Salary

3.22. Innovation in Talent and People Management II

- 3.22.1. Innovation in Organizations
- 3.22.2. New Challenges in the Human Resources Department
- 3.22.3. Innovation Management
- 3.22.4. Tools for Innovation

3.23. Knowledge and Talent Management

- 3.23.1. Knowledge and Talent Management
- 3.23.2. Knowledge Management Implementation

3.24. Transforming Human Resources in the Digital Era

- 3.24.1. The Socioeconomic Context
- 3.24.2. New Forms of Corporate Organization
- 3.24.3. New Methodologies

Module 4. Economic and Financial Management

4.1. Economic Environment

- 4.1.1. Macroeconomic Environment and the National Financial System
- 4.1.2. Financial Institutions
- 4.1.3. Financial Markets
- 4.1.4. Financial Assets
- 4.1.5. Other Financial Sector Entities

4.2. Company Financing

- 4.2.1. Sources of Financing
- 4.2.2. Types of Financing Costs

4.3. Executive Accounting

- 4.3.1. Basic Concepts
- 4.3.2. The Company's Assets
- 4.3.3. The Company's Liabilities
- 4.3.4. The Company's Net Worth
- 4.3.5. The Income Statement

4.4. From General Accounting to Cost Accounting

- 4.4.1. Elements of Cost Calculation
- 4.4.2. Expenses in General Accounting and Cost Accounting
- 4.4.3. Costs Classification

4.5. Information Systems and Business Intelligence

- 4.5.1. Fundamentals and Classification
- 4.5.2. Cost Allocation Phases and Methods
- 4.5.3. Choice of Cost Center and Impact

4.6. Budget and Management Control

- 4.6.1. The Budget Model
- 4.6.2. The Capital Budget
- 4.6.3. The Operating Budget
- 4.6.5. Treasury Budget
- 4.6.6. Budget Monitoring

4.7. Treasury Management

- 4.7.1. Accounting Working Capital and Necessary Working Capital
- 4.7.2. Calculation of Operating Requirements of Funds
- 4.7.3. Credit Management

4.8. Corporate Tax Responsibility

- 4.8.1. Basic Tax Concepts
- 4.8.2. Corporate Income Tax
- 4.8.3. Value Added Tax
- 4.8.4. Other Taxes Related to Commercial with the Mercantile Activity
- 4.8.5. The Company as a Facilitator of the Work of the of the State

4.9. Systems of Control of Enterprises

- 4.9.1. Analysis of Financial Statements
- 4.9.2. The Company's Balance Sheet
- 4.9.3. The Profit and Loss Statement
- 4.9.4. The Statement of Cash Flows
- 4.9.5. Ratio Analysis

4.10. Financial Management

- 4.10.1. The Company's Financial Decisions
- 4.10.2. Financial Department
- 4.10.3. Cash Surpluses
- 4.10.4. Risks Associated with Financial Management
- 4.10.5. Financial Administration Risk Management

4.11. Financial Planning

- 4.11.1. Definition of Financial Planning
- 4.11.2. Actions to be Taken in Financial Planning
- 4.11.3. Creation and Establishment of the Business Strategy
- 4.11.4. The Cash Flow Table
- 4.11.5. The Working Capital Table

4.12. Corporate Financial Strategy

- 4.12.1. Corporate Strategy and Sources of Financing
- 4.12.2. Financial Products for Corporate Financing

4.13. Macroeconomic Context

- 4.13.1. Macroeconomic Context
- 4.13.2. Relevant Economic Indicators
- 4.13.3. Mechanisms for Monitoring of Macroeconomic Magnitudes
- 4.13.4. Economic Cycles

4.14. Strategic Financing

- 4.14.1. Self-Financing
- 4.14.2. Increase in Equity
- 4.14.3. Hybrid Resources
- 4.14.4. Financing Through Intermediaries

4.15. Money and Capital Markets

- 4.15.1. The Money Market
- 4.15.2. The Fixed Income Market
- 4.15.3. The Equity Market
- 4.15.4. The Foreign Exchange Market
- 4.15.5. The Derivatives Market

4.16. Financial Analysis and Planning

- 4.16.1. Analysis of the Balance Sheet
- 4.16.2. Analysis of the Income Statement
- 4.16.3. Profitability Analysis

4.17. Analysis and Resolution of Cases/ Problems

- 4.17.1. Financial Information on Industria de Diseño y Textil, S.A. (INDITEX)

Module 5. Operations and Logistics Management

5.1. Operations Direction and Management

- 5.1.1. The Role of Operations
- 5.1.2. The Impact of Operations on the Management of Companies
- 5.1.3. Introduction to Operations Strategy
- 5.1.4. Operations Management

5.2. Industrial Organization and Logistics

- 5.2.1. Industrial Organization Department
- 5.2.2. Logistics Department

5.3. Structure and Types of Production (MTS, MTO, ATO, ETO, etc)

- 5.3.1. Production System
- 5.3.2. Production Strategy
- 5.3.3. Inventory Management System
- 5.3.4. Production Indicators

5.4. Structure and Types of Procurement

- 5.4.1. Function of Procurement
- 5.4.2. Procurement Management
- 5.4.3. Types of Purchases
- 5.4.4. Efficient Purchasing Management of a Company
- 5.4.5. Stages of the Purchase Decision Process

5.5. Economic Control of Purchasing

- 5.5.1. Economic Influence of Purchases
- 5.5.2. Cost Centers
- 5.5.3. Budget
- 5.5.4. Budgeting vs. Actual Expenditure
- 5.5.5. Budgetary Control Tools

5.6. Warehouse Operations Control

- 5.6.1. Inventory Control
- 5.6.2. Location Systems
- 5.6.3. Stock Management Techniques
- 5.6.4. Storage Systems

5.7. Strategic Purchasing Management

- 5.7.1. Business Strategy
- 5.7.2. Strategic Planning
- 5.7.3. Purchasing Strategies

5.8. Typologies of the Supply Chain (SCM)

- 5.8.1. Supply Chain
- 5.8.2. Benefits of Supply Chain Management
- 5.8.3. Logistical Management in the Supply Chain

<p>5.9. Supply Chain Management</p> <ul style="list-style-type: none"> 5.9.1. The Concept of Management of the Supply Chain (SCM) 5.9.2. Supply Chain Costs and Efficiency 5.9.3. Demand Patterns 5.9.4. Operations Strategy and Change 	<p>5.10. Interactions Between the SCM and All Other Departments</p> <ul style="list-style-type: none"> 5.10.1. Interaction of the Supply Chain 5.10.2. Interaction of the Supply Chain. Integration by Parts 5.10.3. Supply Chain Integration Problems 5.10.4. Supply Chain 	<p>5.11. Logistics Costs</p> <ul style="list-style-type: none"> 5.11.1. Logistics Costs 5.11.2. Problems with Logistics Costs 5.11.3. Optimizing Logistic Costs 	<p>5.12. Profitability and Efficiency of Logistics Chains: KPIS</p> <ul style="list-style-type: none"> 5.12.1. Logistics Chain 5.12.2. Profitability and Efficiency of the Logistics Chain 5.12.3. Indicators of Profitability and Efficiency of the Supply Chain
<p>5.13. Process Management</p> <ul style="list-style-type: none"> 5.13.1. Process Management 5.13.2. Process-Based Approach: Process Mapping 5.13.3. Improvements in Process Management 	<p>5.14. Distribution and Transportation and Logistics</p> <ul style="list-style-type: none"> 5.14.1. Distribution in the Supply Chain 5.14.2. Transportation Logistics 5.14.3. Geographic Information Systems as a Support to Logistics 	<p>5.15. Logistics and Customers</p> <ul style="list-style-type: none"> 5.15.1. Demand Analysis 5.15.2. Demand and Sales Forecast 5.15.3. Sales and Operations Planning 5.15.4. Participatory Planning, Forecasting and Replenishment Planning (CPFR) 	<p>5.16. International Logistics</p> <ul style="list-style-type: none"> 5.16.1. Export and Import Processes 5.16.2. Customs 5.16.3. Methods and Means of International Payment 5.16.4. International Logistics Platforms
<p>5.17. Outsourcing of Operations</p> <ul style="list-style-type: none"> 5.17.1. Operations Management and Outsourcing 5.17.2. Outsourcing Implementation in Logistics Environments 	<p>5.18. Competitiveness in Operations</p> <ul style="list-style-type: none"> 5.18.1. Operations Management 5.18.2. Operational Competitiveness 5.18.3. Operations Strategy and Competitive Advantages 	<p>5.19. Quality Management</p> <ul style="list-style-type: none"> 5.19.1. Internal and External Customers 5.19.2. Quality Costs 5.19.3. Ongoing Improvement and the Deming Philosophy 	

Module 6. Information Systems Management

6.1. Technological Environment

- 6.1.1. Technology and Globalization
- 6.1.2. Economic Environment and Technology
- 6.1.3. Technological Environment and its Impact on Companies

6.2. Information Systems and Technologies in the Enterprise

- 6.2.1. The Evolution of the IT Model
- 6.2.2. Organization and IT Departments
- 6.2.3. Information Technology and Economic Environment

6.3. Corporate Strategy and Technology Strategy

- 6.3.1. Creating Value for Customers and Shareholders
- 6.3.2. Strategic IS/IT Decisions
- 6.3.3. Corporate Strategy Vs. Technology and Digital Strategy

6.4. Information Systems Management

- 6.4.1. Corporate Governance of Technology and Information Systems
- 6.4.2. Management of Information Systems in Companies
- 6.4.3. Expert Managers in Information Systems: Roles and Functions

6.5. Information Technology Strategic Planning

- 6.5.1. Information Systems and Corporate Strategy
- 6.5.2. Strategic Planning of Information Systems
- 6.5.3. Phases of Information Systems Strategic Planning

6.6. Information Systems for Decision-Making

- 6.6.1. Business Intelligence
- 6.6.2. Data Warehouse
- 6.6.3. BSC or Balanced Scorecard

6.7. Exploring the Information

- 6.7.1. SQL: Relational Databases. Basic Concepts
- 6.7.2. Networks and Communications
- 6.7.3. Operational System: Standardized Data Models
- 6.7.4. Strategic System: OLAP, Multidimensional Model and Graphic Dashboards
- 6.7.5. Strategic DB Analysis and Report Composition

6.8. Enterprise Business Intelligence

- 6.8.1. The World of Data
- 6.8.2. Relevant Concepts
- 6.8.3. Main Characteristics
- 6.8.4. Solutions in Today's Market
- 6.8.5. Overall Architecture of a BI Solution
- 6.8.6. Cybersecurity in BI and Data Science

6.9. New Business Concept

- 6.9.1. Why BI
- 6.9.2. Obtaining Information
- 6.9.3. BI in the Different Departments of the Company
- 6.9.4. Reasons to Invest in BI

6.10. BI Tools and Solutions

- 6.10.1. How to Choose the Best Tool?
- 6.10.2. Microsoft Power BI, MicroStrategy y Tableau
- 6.10.3. SAP BI, SAS BI and Qlikview
- 6.10.4. Prometheus

6.11. BI Project Planning and Management

- 6.11.1. First Steps to Define a BI Project
- 6.11.2. BI Solution for the Company
- 6.11.3. Requirements and Objectives

6.12. Corporate Management Applications

- 6.12.1. Information Systems and Corporate Management
- 6.12.2. Applications for Corporate Management
- 6.12.3. Enterprise Resource Planning or ERP Systems

6.13. Digital Transformation

- 6.13.1. Conceptual Framework of Digital Transformation
- 6.13.2. Digital Transformation; Key Elements, Benefits and Drawbacks
- 6.13.3. Digital Transformation in Companies

6.14. Technology and Trends

- 6.14.1. Main Trends in the Field of Technology that are Changing Business Models
- 6.14.2. Analysis of the Main Emerging Technologies

6.15. IT Outsourcing

- 6.15.1. Conceptual Framework of Outsourcing
- 6.15.2. IT Outsourcing and Its Impact on the Business
- 6.15.3. Keys to Implement Corporate IT Outsourcing Projects

Module 7. Commercial Management, Strategic Marketing and Corporate Communication
7.1. Commercial Management

- 7.1.1. Conceptual Framework of Commercial Management
- 7.1.2. Business Strategy and Planning
- 7.1.3. The Role of Sales Managers

7.2. Marketing

- 7.2.1. The Concept of Marketing
- 7.2.2. Basic Elements of Marketing
- 7.2.3. Marketing Activities of the Company

7.3. Strategic Marketing Management

- 7.3.1. The Concept of Strategic Marketing
- 7.3.2. Concept of Strategic Marketing Planning
- 7.3.3. Stages in the Process of Strategic Marketing Planning

7.4. Digital Marketing and E-Commerce

- 7.4.1. Digital Marketing and E-Commerce Objectives
- 7.4.2. Digital Marketing and Media Used
- 7.4.3. E-Commerce General Context
- 7.4.4. Categories of E-Commerce
- 7.4.5. Advantages and Disadvantages of E-Commerce Versus Traditional Commerce

7.5. Managing Digital Business

- 7.5.1. Competitive Strategy in the Face of the Growing Digitalization of the Media
- 7.5.2. Design and Creation of a Digital Marketing Plan
- 7.5.3. ROI Analysis in a Digital Marketing Plan

7.6. Digital Marketing to Reinforce the Brand

- 7.6.1. Online Strategies to Improve Your Brand's Reputation
- 7.6.2. Branded Content and Storytelling

7.7. Digital Marketing Strategy

- 7.7.1. Defining the Digital Marketing Strategy
- 7.7.2. Digital Marketing Strategy Tools

7.8. Digital Marketing to Attract and Retain Customers

- 7.8.1. Loyalty and Engagement Strategies Through the Internet
- 7.8.2. Visitor Relationship Management
- 7.8.3. Hypersegmentation

7.9. Managing Digital Campaigns

- 7.9.1. What is a Digital Advertising Campaign?
- 7.9.2. Steps to Launch an Online Marketing Campaign
- 7.9.3. Mistakes in Digital Advertising Campaigns

7.10. Online Marketing Plan

- 7.10.1. What is an Online Marketing Plan?
- 7.10.2. Steps to Create an Online Marketing Plan
- 7.10.3. Advantages of Having an Online Marketing Plan

7.11. Blended Marketing

- 7.11.1. What is Blended Marketing?
- 7.11.2. Differences Between Online and Offline Marketing
- 7.11.3. Aspects to be Taken into Account in the Blended Marketing Strategy
- 7.11.4. Characteristics of a Blended Marketing Strategy
- 7.11.5. Recommendations in Blended Marketing
- 7.11.6. Benefits of Blended Marketing

7.12. Sales Strategy

- 7.12.1. Sales Strategy
- 7.12.2. Sales Methods

7.13. Corporate Communication

- 7.13.1. Concept
- 7.13.2. The Importance of Communication in the Organization
- 7.13.3. Type of Communication in the Organization
- 7.13.4. Functions of Communication in the Organization
- 7.13.5. Elements of Communication
- 7.13.6. Communication Problems
- 7.13.7. Communication Scenarios

7.14. Corporate Communication Strategy

- 7.14.1. Motivational Programs, Social Action, Participation and Training with HR
- 7.14.2. Internal Communication Tools and Supports
- 7.14.3. Internal Communication Plan

7.15. Digital Communication and Reputation

- 7.15.1. Online Reputation
- 7.15.2. How to Measure Digital Reputation?
- 7.15.3. Online Reputation Tools
- 7.15.4. Online Reputation Report
- 7.15.5. Online Branding

Module 8. Market Research, Advertising and Commercial Management

8.1. Market Research

- 8.1.1. Marketing Research: Historical Origin
- 8.1.2. Analysis and Evolution of the Conceptual Framework of Marketing Research
- 8.1.3. Key Elements and Value Contribution of Market Research

8.2. Quantitative Research Methods and Techniques

- 8.2.1. Sample Size
- 8.2.2. Sampling
- 8.2.3. Types of Quantitative Techniques

8.3. Qualitative Research Methods and Techniques

- 8.3.1. Types of Qualitative Research
- 8.3.2. Qualitative Research Techniques

8.4. Market Segmentation

- 8.4.1. Market Segmentation Concept
- 8.4.2. Utility and Segmentation Requirements
- 8.4.3. Consumer Market Segmentation
- 8.4.4. Industrial Market Segmentation
- 8.4.5. Segmentation Strategies
- 8.4.6. Segmentation Based on Marketing - Mix Criteria
- 8.4.7. Market Segmentation Methodology

8.5. Research Project Management

- 8.5.1. Market Research as a Process
- 8.5.2. Planning Stages in Market Research
- 8.5.3. Stages of Market Research Implementation
- 8.5.4. Managing a Research Project

8.6. International Market Research

- 8.6.1. International Market Research
- 8.6.2. International Market Research Process
- 8.6.3. The Importance of Secondary Sources in International Market Research

8.7. Feasibility Studies

- 8.7.1. Concept and Usefulness
- 8.7.2. Outline of a Feasibility Study
- 8.7.3. Development of a Feasibility Study

8.8. Publicity

- 8.8.1. Historical Background of Advertising
- 8.8.2. Conceptual Framework of Advertising; Principles, Concept of Briefing and Positioning
- 8.8.3. Advertising Agencies, Media Agencies and Advertising Professionals
- 8.8.4. Importance of Advertising in Business
- 8.8.5. Advertising Trends and Challenges

8.9. Developing the Marketing Plan

- 8.9.1. Marketing Plan Concept
- 8.9.2. Situation Analysis and Diagnosis
- 8.9.3. Strategic Marketing Decisions
- 8.9.4. Operational Marketing Decisions

8.10. Strategies

- 8.10.1. Integrated Marketing Communication
- 8.10.2. Advertising Communication Plan
- 8.10.3. Merchandising as a Communication Technique

8.11. Media Planning

- 8.11.1. Origin and Evolution of Media Planning
- 8.11.2. Media
- 8.11.3. Media Plan

8.12. Fundamentals of Commercial Management

- 8.12.1. The Role of Commercial Management
- 8.12.2. Systems of Analysis of the Company/Market Commercial Competitive Situation
- 8.12.3. Commercial Planning Systems of the Company
- 8.12.4. Main Competitive Strategies

8.13. Commercial Negotiation

- 8.13.1. Commercial Negotiation
- 8.13.2. Psychological Issues in Negotiation
- 8.13.3. Main Negotiation Methods
- 8.13.4. The Negotiation Process

8.14. Decision-Making in Commercial Management

- 8.14.1. Commercial Strategy and Competitive Strategy
- 8.14.2. Decision Making Models
- 8.14.3. Decision-Making Analytics and Tools
- 8.14.4. Human Behavior in Decision Making

8.15. Leadership and Management of the Sales Network

- 8.15.1. Sales Management. Sales Management
- 8.15.2. Networks Serving Commercial Activity
- 8.15.3. Salesperson Recruitment and Training Policies
- 8.15.4. Remuneration Systems for Own and External Commercial Networks
- 8.15.5. Management of the Commercial Process. Control and Assistance to the Work of the Sales Representatives Based on the Information

8.16. Implementing the Commercial Function

- 8.16.1. Recruitment of Own Sales Representatives and Sales Agents
- 8.16.2. Controlling Commercial Activity
- 8.16.3. The Code of Ethics of Sales Personnel
- 8.16.4. Compliance with Legislation
- 8.16.5. Generally Accepted Standards of Business Conduct

8.17. Key Account Management

- 8.17.1. Concept of Key Account Management
- 8.17.2. The Key Account Manager
- 8.17.3. Key Account Management Strategy

8.18. Financial and Budgetary Management

- 8.18.1. The Break-Even Point
- 8.18.2. The Sales Budget Control of Management and of the Annual Sales Plan
- 8.18.3. Financial Impact of Strategic Sales Decisions
- 8.18.4. Cycle Management, Turnover, Profitability and Liquidity
- 8.18.5. Income Statement

Module 9. Innovation and Project Management

9.1. Innovation

- 9.1.1. Introduction to Innovation
- 9.1.2. Innovation in the Entrepreneurial Ecosystem
- 9.1.3. Instruments and Tools for the Business Innovation Process.

9.2. Innovation Strategy

- 9.2.1. Strategic Intelligence and Innovation
- 9.2.2. Innovation from Strategy

9.3. Project Management for Startups

- 9.3.1. Startup Concept
- 9.3.2. Lean Startup Philosophy
- 9.3.3. Stages of Startup Development
- 9.3.4. The Role of a Project Manager in a Startup

9.4. Business Model Design and Validation

- 9.4.1. Conceptual Framework of a Business Model
- 9.4.2. Business Model Design and Validation

9.5. Project Management

- 9.5.1. Project Management: Identification of Opportunities to Develop Corporate Innovation Projects.
- 9.5.2. Main stages or Phases in the Direction and Management of Innovation Projects

9.6. Project Change Management: Training Management

- 9.6.1. Concept of Change Management
- 9.6.2. The Change Management Process
- 9.6.3. Change Implementation

9.7. Project Communication Management

- 9.7.1. Project Communications Management
- 9.7.2. Key Concepts for Project Communications Management
- 9.7.3. Emerging Trends
- 9.7.4. Adaptations to Equipment
- 9.7.5. Planning Communications Management
- 9.7.6. Manage Communications
- 9.7.7. Monitoring Communications

9.8. Traditional and Innovative Methodologies

- 9.8.1. Innovative Methodologies
- 9.8.2. Basic Principles of Scrum
- 9.8.3. Differences between the Main Aspects of Scrum and Traditional Methodologies

9.9. Creation of a Startup

- 9.9.1. Creation of a Startup
- 9.9.2. Organization and Culture
- 9.9.3. Top Ten Reasons Why Startups Fail
- 9.9.4. Legal Aspects

9.10. Project Risk Management Planning

- 9.10.1. Risk Planning
- 9.10.2. Elements for Creating a Risk Management Plan
- 9.10.3. Tools for Creating a Risk Management Plan
- 9.10.4. Content of the Risk Management Plan

Module 10. Executive Management

10.1. General Management

- 10.1.1. The Concept of General Management
- 10.1.2. The General Manager's Action
- 10.1.3. The CEO and Their Responsibilities
- 10.1.4. Transforming the Work of Management

**10.2. Manager Functions:
Organizational Culture and
Approaches**

- 10.2.1. Manager Functions: Organizational Culture and Approaches

10.3. Operations Management

- 10.3.1. The Importance of Management
- 10.3.2. Value Chain
- 10.3.3. Quality Management

**10.4. Public Speaking and Spokesperson
Education**

- 10.4.1. Interpersonal Communication
- 10.4.2. Communication Skills and Influence
- 10.4.3. Communication Barriers

**10.5. Personal and Organizational
Communications Tools**

- 10.5.1. Interpersonal Communication
- 10.5.2. Interpersonal Communication Tools
- 10.5.3. Communication in the Organization
- 10.5.4. Tools in the Organization

10.6. Communication in Crisis Situations

- 10.6.1. Crisis
- 10.6.2. Phases of the Crisis
- 10.6.3. Messages: Contents and Moments

10.7. Preparation of a Crisis Plan

- 10.7.1. Analysis of Possible Problems
- 10.7.2. Planning
- 10.7.3. Adequacy of Personnel

10.8. Emotional Intelligence

- 10.8.1. Emotional Intelligence and Communication
- 10.8.2. Assertiveness, Empathy, and Active Listening
- 10.8.3. Self-Esteem and Emotional Communication

10.9. Personal Branding

- 10.9.1. Strategies to Develop Personal Branding
- 10.9.2. Personal Branding Laws
- 10.9.3. Tools for Creating Personal Brands

**10.10. Leadership and Team
Management**

- 10.10.1. Leadership and Leadership Styles
- 10.10.2. Leader Capabilities and Challenges
- 10.10.3. Managing Change Processes
- 10.10.4. Managing Multicultural Teams

Module 11. Fundamentals of Artificial Intelligence**11.1. History of Artificial Intelligence**

- 11.1.1. When Do We Start Talking About Artificial Intelligence?
- 11.1.2. References in Film
- 11.1.3. Importance of Artificial Intelligence
- 11.1.4. Technologies that Enable and Support Artificial Intelligence

11.2. Artificial Intelligence in Games

- 11.2.1. Game Theory
- 11.2.2. Minimax and Alpha-Beta Pruning
- 11.2.3. Simulation: Monte Carlo

11.3. Neural Networks

- 11.3.1. Biological Fundamentals
- 11.3.2. Computational Model
- 11.3.3. Supervised and Unsupervised Neural Networks
- 11.3.4. Simple Perceptron
- 11.3.5. Multilayer Perceptron

11.4. Genetic Algorithms

- 11.4.1. History
- 11.4.2. Biological Basis
- 11.4.3. Problem Coding
- 11.4.4. Generation of the Initial Population
- 11.4.5. Main Algorithm and Genetic Operators
- 11.4.6. Evaluation of Individuals: Fitness

11.5. Thesauri, Vocabularies, Taxonomies

- 11.5.1. Vocabulary
- 11.5.2. Taxonomy
- 11.5.3. Thesauri
- 11.5.4. Ontologies
- 11.5.5. Knowledge Representation Semantic Web

11.6. Semantic Web

- 11.6.1. Specifications RDF, RDFS and OWL
- 11.6.2. Inference/ Reasoning
- 11.6.3. Linked Data

11.7. Expert Systems and DSS

- 11.7.1. Expert Systems
- 11.7.2. Decision Support Systems

11.8. Chatbots and Virtual Assistants

- 11.8.1. Types of Assistants: Voice and Text Assistants
- 11.8.2. Fundamental Parts for the Development of an Assistant: Intents, Entities and Dialogue Flow
- 11.8.3. Integrations: Web, Slack, WhatsApp, Facebook
- 11.8.4. Assistant Development Tools: Dialog Flow, Watson Assistant

11.9. AI Implementation Strategy**11.10. Future of Artificial Intelligence**

- 11.10.1. Understand How to Detect Emotions Using Algorithms
- 11.10.2. Creating a Personality: Language, Expressions and Content
- 11.10.3. Trends of Artificial Intelligence
- 11.10.4. Reflections

Module 12. Data Types and

12.1. Statistics

- 12.1.1. Statistics: Descriptive Statistics, Statistical Inferences
- 12.1.2. Population, Sample, Individual
- 12.1.3. Variables: Definition, Measurement Scales

12.2. Types of Data Statistics

- 12.2.1. According to Type
 - 12.2.1.1. Quantitative: Continuous Data and Discrete Data
 - 12.2.1.2. Qualitative: Binomial Data, Nominal Data and Ordinal Data
- 12.2.2. According to Its Shape
 - 12.2.2.1. Numeric
 - 12.2.2.2. Text:
 - 12.2.2.3. Logical
- 12.2.3. According to Its Source
 - 12.2.3.1. Primary
 - 12.2.3.2. Secondary

12.3. Life Cycle of Data

- 12.3.1. Stages of the Cycle
- 12.3.2. Milestones of the Cycle
- 12.3.3. FAIR Principles

12.4. Initial Stages of the Cycle

- 12.4.1. Definition of Goals
- 12.4.2. Determination of Resource Requirements
- 12.4.3. Gantt Chart
- 12.4.4. Data Structure

12.5. Data Collection

- 12.5.1. Methodology of Data Collection
- 12.5.2. Data Collection Tools
- 12.5.3. Data Collection Channels

12.6. Data Cleaning

- 12.6.1. Phases of Data Cleansing
- 12.6.2. Data Quality
- 12.6.3. Data Manipulation (with R)

12.7. Data Analysis, Interpretation and Result Evaluation

- 12.7.1. Statistical Measures
- 12.7.2. Relationship Indexes
- 12.7.3. Data Mining

12.8. Datawarehouse

- 12.8.1. Elements that Comprise it
- 12.8.2. Design
- 12.8.3. Aspects to Consider

12.9. Data Availability

- 12.9.1. Access
- 12.9.2. Uses
- 12.9.3. Security

12.10. Regulatory Framework

- 12.10.1. Data Protection Law
- 12.10.2. Good Practices
- 12.10.3. Other Regulatory Aspects

Module 13. Data in Artificial Intelligence**13.1. Data Science**

- 13.1.1. Data Science
- 13.1.2. Advanced Tools for the Data Scientist

13.2. Data, Information and Knowledge

- 13.2.1. Data, Information and Knowledge
- 13.2.2. Types of Data
- 13.2.3. Data Sources

13.3. From Data to Information

- 13.3.1. Data Analysis
- 13.3.2. Types of Analysis
- 13.3.3. Extraction of Information from a Dataset

13.4. Extraction of Information Through Visualization

- 13.4.1. Visualization as an Analysis Tool
- 13.4.2. Visualization Methods
- 13.4.3. Visualization of a Data Set

13.5. Data Quality

- 13.5.1. Quality Data
- 13.5.2. Data Cleaning
- 13.5.3. Basic Data Pre-Processing

13.6. Dataset

- 13.6.1. Dataset Enrichment
- 13.6.2. The Curse of Dimensionality
- 13.6.3. Modification of Our Data Set

13.7. Unbalance

- 13.7.1. Classes of Unbalance
- 13.7.2. Unbalance Mitigation Techniques
- 13.7.3. Balancing a Dataset

13.8. Unsupervised Models

- 13.8.1. Unsupervised Model
- 13.8.2. Methods
- 13.8.3. Classification with Unsupervised Models

13.9. Supervised Models

- 13.9.1. Supervised Model
- 13.9.2. Methods
- 13.9.3. Classification with Supervised Models

13.10. Tools and Good Practices

- 13.10.1. Good Practices for Data Scientists
- 13.10.2. The Best Model
- 13.10.3. Useful Tools

Module 14. Data Mining, Selection, Pre-Processing and Transformation**14.1. Statistical Inference**

- 14.1.1. Descriptive Statistics vs. Statistical Inference
- 14.1.2. Parametric Procedures
- 14.1.3. Non-Parametric Procedures

14.2. Exploratory Analysis

- 14.2.1. Descriptive Analysis
- 14.2.2. Visualization
- 14.2.3. Data Preparation

14.3. Data Preparation

- 14.3.1. Integration and Data Cleaning
- 14.3.2. Normalization of Data
- 14.3.3. Transforming Attributes

14.4. Missing Values

- 14.4.1. Treatment of Missing Values
- 14.4.2. Maximum Likelihood Imputation Methods
- 14.4.3. Missing Value Imputation Using Machine Learning

14.5. Noise in the Data

- 14.5.1. Noise Classes and Attributes
- 14.5.2. Noise Filtering
- 14.5.3. The Effect of Noise

14.6. The Curse of Dimensionality

- 14.6.1. Oversampling
- 14.6.2. Undersampling
- 14.6.3. Multidimensional Data Reduction

14.7. From Continuous to Discrete Attributes

- 14.7.1. Continuous Data Vs. Discrete Data
- 14.7.2. Discretization Process

14.8. The Data

- 14.8.1. Data Selection
- 14.8.2. Prospects and Selection Criteria
- 14.8.3. Selection Methods

14.9. Instance Selection

- 14.9.1. Methods for Instance Selection
- 14.9.2. Prototype Selection
- 14.9.3. Advanced Methods for Instance Selection

14.10. Data Pre-Processing in Environments

Module 15. Algorithm and Complexity in Artificial Intelligence

15.1. Introduction to Algorithm Design Strategies

- 15.1.1. Recursion
- 15.1.2. Divide and Conquer
- 15.1.3. Other Strategies

15.2. Efficiency and Analysis of Algorithms

- 15.2.1. Efficiency Measures
- 15.2.2. Measuring the Size of the Input
- 15.2.3. Measuring Execution Time
- 15.2.4. Worst, Best and Average Case
- 15.2.5. Asymptotic Notation
- 15.2.6. Criteria for Mathematical Analysis of Non-Recursive Algorithms
- 15.2.7. Mathematical Analysis of Recursive Algorithms
- 15.2.8. Empirical Analysis of Algorithms

15.3. Sorting Algorithms

- 15.3.1. Concept of Sorting
- 15.3.2. Bubble Sorting
- 15.3.3. Sorting by Selection
- 15.3.4. Sorting by Insertion
- 15.3.5. Merge Sort
- 15.3.6. Quick Sort

15.4. Algorithms with Trees

- 15.4.1. Tree Concept
- 15.4.2. Binary Trees
- 15.4.3. Tree Paths
- 15.4.4. Representing Expressions
- 15.4.5. Ordered Binary Trees
- 15.4.6. Balanced Binary Trees

15.5. Algorithms Using Heaps

- 15.5.1. Heaps
- 15.5.2. The Heapsort Algorithm
- 15.5.3. Priority Queues

15.6. Graph Algorithms

- 15.6.1. Representation
- 15.6.2. Traversal in Width
- 15.6.3. Depth Travel
- 15.6.4. Topological Sorting

15.7. Greedy Algorithms

- 15.7.1. Greedy Strategy
- 15.7.2. Elements of the Greedy Strategy
- 15.7.3. Currency Exchange
- 15.7.4. Traveler's Problem
- 15.7.5. Backpack Problem

15.8. Minimal Path Finding

- 15.8.1. The Minimum Path Problem
- 15.8.2. Negative Arcs and Cycles
- 15.8.3. Dijkstra's Algorithm

15.9. Algorithms on Graphs

- 15.9.1. The Minimum Covering Tree
- 15.9.2. Prim's Algorithm
- 15.9.3. Kruskal's Algorithm
- 15.9.4. Complexity Analysis

15.10. Backtracking

- 15.10.1. Backtracking
- 15.10.2. Alternative Techniques

Module 16. Intelligent Systems**16.1. Agent Theory**

- 16.1.1. Concept History
- 16.1.2. Agent Definition
- 16.1.3. Agents in Artificial Intelligence
- 16.1.4. Agents in Software Engineering

16.2. Agent Architectures

- 16.2.1. The Reasoning Process of an Agent
- 16.2.2. Reactive Agents
- 16.2.3. Deductive Agents
- 16.2.4. Hybrid Agents
- 16.2.5. Comparison

16.3. Information and Knowledge

- 16.3.1. Difference between Data, Information and Knowledge
- 16.3.2. Data Quality Assessment
- 16.3.3. Data Collection Methods
- 16.3.4. Information Acquisition Methods
- 16.3.5. Knowledge Acquisition Methods

16.4. Knowledge Representation

- 16.4.1. The Importance of Knowledge Representation
- 16.4.2. Definition of Knowledge Representation According to Roles
- 16.4.3. Knowledge Representation Features

16.5. Ontologies

- 16.5.1. Introduction to Metadata
- 16.5.2. Philosophical Concept of Ontology
- 16.5.3. Computing Concept of Ontology
- 16.5.4. Domain Ontologies and Higher-Level Ontologies
- 16.5.5. How to Build an Ontology?

16.6. Ontology Languages and Ontology Creation Software

- 16.6.1. Triple RDF, Turtle and N
- 16.6.2. RDF Schema
- 16.6.3. OWL
- 16.6.4. SPARQL
- 16.6.5. Introduction to Ontology Creation Tools
- 16.6.6. Installing and Using Protégé

16.7. Semantic Web

- 16.7.1. Current and Future Status of the Semantic Web
- 16.7.2. Semantic Web Applications

16.8. Other Knowledge Representation Models

- 16.8.1. Vocabulary
- 16.8.2. Global Vision
- 16.8.3. Taxonomy
- 16.8.4. Thesauri
- 16.8.5. Folksonomy
- 16.8.6. Comparison
- 16.8.7. Mind Maps

16.9. Knowledge Representation Assessment and Integration

- 16.9.1. Zero-Order Logic
- 16.9.2. First-Order Logic
- 16.9.3. Descriptive Logic
- 16.9.4. Relationship between Different Types of Logic
- 16.9.5. Prolog: Programming Based on First-Order Logic

16.10. Semantic Reasoners, Knowledge-Based Systems and Expert Systems

- 16.10.1. Concept of Reasoner
- 16.10.2. Reasoner Applications
- 16.10.3. Knowledge-Based Systems
- 16.10.4. MYCIN: History of Expert Systems
- 16.10.5. Expert Systems Elements and Architecture
- 16.10.6. Creating Expert Systems

Module 17. Machine Learning and Data Mining

17.1. Introduction to Knowledge Discovery Processes and Basic Concepts of Machine Learning

- 17.1.1. Key Concepts of Knowledge Discovery Processes
- 17.1.2. Historical Perspective of Knowledge Discovery Processes
- 17.1.3. Stages of the Knowledge Discovery Processes
- 17.1.4. Techniques Used in Knowledge Discovery Processes
- 17.1.5. Characteristics of Good Machine Learning Models
- 17.1.6. Types of Machine Learning Information
- 17.1.7. Basic Learning Concepts
- 17.1.8. Basic Concepts of Unsupervised Learning

17.2. Data Exploration and Pre-Processing

- 17.2.1. Data Processing
- 17.2.2. Data Processing in the Data Analysis Flow
- 17.2.3. Types of Data
- 17.2.4. Data Transformations
- 17.2.5. Visualization and Exploration of Continuous Variables
- 17.2.6. Visualization and Exploration of Categorical Variables
- 17.2.7. Correlation Measures
- 17.2.8. Most Common Graphic Representations
- 17.2.9. Introduction to Multivariate Analysis and Dimensionality Reduction

17.3. Decision Trees

- 17.3.1. ID Algorithm
- 17.3.2. Algorithm C
- 17.3.3. Overtraining and Pruning
- 17.3.4. Result Analysis

17.4. Evaluation of Classifiers

- 17.4.1. Confusion Matrixes
- 17.4.2. Numerical Evaluation Matrixes
- 17.4.3. Kappa Statistic
- 17.4.4. ROC Curves

17.5. Classification Rules

- 17.5.1. Rule Evaluation Measures
- 17.5.2. Introduction to Graphic Representation
- 17.5.3. Sequential Overlay Algorithm

17.6. Neural Networks

- 17.6.1. Basic Concepts
- 17.6.2. Simple Neural Networks
- 17.6.3. Backpropagation Algorithm
- 17.6.4. Introduction to Recurrent Neural Networks

17.7. Bayesian Methods

- 17.7.1. Basic Probability Concepts
- 17.7.2. Bayes' Theorem
- 17.7.3. Naive Bayes
- 17.7.4. Introduction to Bayesian Networks

17.8. Regression and Continuous Response Models

- 17.8.1. Simple Linear Regression
- 17.8.2. Multiple Linear Regression
- 17.8.3. Logistic Regression
- 17.8.4. Regression Trees
- 17.8.5. Introduction to Support Vector Machines (SVM)
- 17.8.6. Goodness-of-Fit Measures

17.9. Clustering

- 17.9.1. Basic Concepts
- 17.9.2. Hierarchical Clustering
- 17.9.3. Probabilistic Methods
- 17.9.4. EM Algorithm
- 17.9.5. B-Cubed Method
- 17.9.6. Implicit Methods

17.10. Text Mining and Natural Language Processing (NLP)

- 17.10.1. Basic Concepts
- 17.10.2. Corpus Creation
- 17.10.3. Descriptive Analysis
- 17.10.4. Introduction to Sentiment Analysis

Module 18. Neural networks, the basis of Deep Learning**18.1. Deep Learning**

- 18.1.1. Types of Deep Learning
- 18.1.2. Applications of Deep Learning
- 18.1.3. Advantages and Disadvantages of Deep Learning

18.2. Surgery

- 18.2.1. Sum
- 18.2.2. Product
- 18.2.3. Transfer

18.3. Layers

- 18.3.1. Input Layer
- 18.3.2. Cloak
- 18.3.3. Output Layer

18.4. Layer Bonding and Operations

- 18.4.1. Architecture Design
- 18.4.2. Connection between Layers
- 18.4.3. Forward Propagation

18.5. Construction of the First Neural Network

- 18.5.1. Network Design
- 18.5.2. Establish the Weights
- 18.5.3. Network Training

18.6. Trainer and Optimizer

- 18.6.1. Optimizer Selection
- 18.6.2. Establishment of a Loss Function
- 18.6.3. Establishing a Metric

18.7. Application of the Principles of Neural Networks

- 18.7.1. Activation Functions
- 18.7.2. Backward Propagation
- 18.7.3. Parameter Adjustment

18.8. From Biological to Artificial Neurons

- 18.8.1. Functioning of a Biological Neuron
- 18.8.2. Transfer of Knowledge to Artificial Neurons
- 18.8.3. Establish Relations Between the Two

18.9. Implementation of MLP (Multilayer Perceptron) with Keras

- 18.9.1. Definition of the Network Structure
- 18.9.2. Model Compilation
- 18.9.3. Model Training

18.10. Fine Tuning Hyperparameters of Neural Networks

- 18.10.1. Selection of the Activation Function
- 18.10.2. Set the Learning Rate
- 18.10.3. Adjustment of Weights

Module 19. Deep Neural Networks Training

19.1. Gradient Problems

- 19.1.1. Gradient Optimization Techniques
- 19.1.2. Stochastic Gradients
- 19.1.3. Weight Initialization Techniques

19.2. Reuse of Pre-Trained Layers

- 19.2.1. Learning Transfer Training
- 19.2.2. Feature Extraction
- 19.2.3. Deep Learning

19.3. Optimizers

- 19.3.1. Stochastic Gradient Descent Optimizers
- 19.3.2. Optimizers Adam and RMSprop
- 19.3.3. Moment Optimizers

19.4. Programming of the Learning Rate

- 19.4.1. Automatic Learning Rate Control
- 19.4.2. Learning Cycles
- 19.4.3. Smoothing Terms

19.5. Overfitting

- 19.5.1. Cross Validation
- 19.5.2. Regularization
- 19.5.3. Evaluation Metrics

19.6. Practical Guidelines

- 19.6.1. Model Design
- 19.6.2. Selection of Metrics and Evaluation Parameters
- 19.6.3. Hypothesis Testing

19.7. Transfer Learning

- 19.7.1. Transfer Learning Training
- 19.7.2. Feature Extraction
- 19.7.3. Deep Learning

19.8. Data Augmentation

- 19.8.1. Image Transformations
- 19.8.2. Synthetic Data Generation
- 19.8.3. Text Transformation

19.9. Practical Application of Transfer Learning

- 19.9.1. Transfer Learning Training
- 19.9.2. Feature Extraction
- 19.9.3. Deep Learning

19.10. Regularization

- 19.10.1. L and L
- 19.10.2. Regularization by Maximum Entropy
- 19.10.3. Dropout

Module 20. Model customization and training with TensorFlow**20.1. TensorFlow**

- 20.1.1. Use of the TensorFlow Library
- 20.1.2. Model Training with TensorFlow
- 20.1.3. Operations with Graphs in TensorFlow

20.2. TensorFlow and NumPy

- 20.2.1. NumPy Computing Environment for TensorFlow
- 20.2.2. Using NumPy Arrays with TensorFlow
- 20.2.3. NumPy Operations for TensorFlow Graphs

20.3. Model Customization and Training Algorithms

- 20.3.1. Building Custom Models with TensorFlow
- 20.3.2. Management of Training Parameters
- 20.3.3. Use of Optimization Techniques for Training

20.4. TensorFlow Features and Graphs

- 20.4.1. Functions with TensorFlow
- 20.4.2. Use of Graphs for Model Training
- 20.4.3. Graphic Optimization with TensorFlow Operations

20.5. Loading and Preprocessing Data with TensorFlow

- 20.5.1. Loading Data Sets with TensorFlow
- 20.5.2. Preprocessing Data with TensorFlow
- 20.5.3. Using TensorFlow Tools for Data Manipulation

20.6. The tf.data API

- 20.6.1. Using the tf.data API for Data Processing
- 20.6.2. Construction of Data Streams with tf.data
- 20.6.3. Using the Tf.data API for Model Training

20.7. The TFRecord Format

- 20.7.1. Using the TFRecord API for Data Serialization
- 20.7.2. TFRecord File Upload with TensorFlow
- 20.7.3. Using TFRecord Files for Model Training

20.8. Keras Preprocessing Layers

- 20.8.1. Using the Keras Preprocessing API
- 20.8.2. Preprocessing Pipelined Construction with Keras
- 20.8.3. Using the Keras Preprocessing API for Model Training

20.9. The TensorFlow Datasets Project

- 20.9.1. Using TensorFlow Datasets for Data Loading
- 20.9.2. Preprocessing Data with TensorFlow Datasets
- 20.9.3. Using TensorFlow Datasets for Model Training

20.10. Building a Deep Learning App with TensorFlow

- 20.10.1. Practical Applications
- 20.10.2. Building a Deep Learning App with TensorFlow
- 20.10.3. Model Training with TensorFlow
- 20.10.4. Using the Application for the Prediction of Results

Module 21. Deep Computer Vision with Convolutional Neural Networks

21.1. The Visual Cortex Architecture

- 21.1.1. Functions of the Visual Cortex
- 21.1.2. Theories of Computational Vision
- 21.1.3. Models of Image Processing

21.2. Convolutional Layers

- 21.2.1. Reuse of Weights in Convolution
- 21.2.2. Convolution D
- 21.2.3. Activation Functions

21.3. Grouping Layers and Implementation of Grouping Layers with Keras

- 21.3.1. Pooling and Striding
- 21.3.2. Flattening
- 21.3.3. Types of Pooling

21.4. CNN Architecture

- 21.4.1. VGG Architecture
- 21.4.2. AlexNet Architecture
- 21.4.3. ResNet Architecture

21.5. Implementing a CNN ResNet using Keras

- 21.5.1. Weight Initialization
- 21.5.2. Input Layer Definition
- 21.5.3. Output Definition

21.6. Use of Pre-Trained Keras Models

- 21.6.1. Characteristics of Pre-Trained Models
- 21.6.2. Uses of Pre-Trained Models
- 21.6.3. Advantages of Pre-Trained Models

21.7. Pre-Trained Models for Transfer Learning

- 21.7.1. Learning by Transfer
- 21.7.2. Transfer Learning Process
- 21.7.3. Advantages of Transfer Learning

21.8. Deep Computer Vision Classification and Localization

- 21.8.1. Image Classification
- 21.8.2. Localization of Objects in Images
- 21.8.3. Object Detection

21.9. Object Detection and Object Tracking

- 21.9.1. Object Detection Methods
- 21.9.2. Object Tracking Algorithms
- 21.9.3. Tracking and Localization Techniques

21.10. Semantic Segmentation

- 21.10.1. Deep Learning for Semantic Segmentation
- 21.10.1. Edge Detection
- 21.10.1. Rule-Based Segmentation Methods

Module 22. Natural Language Processing (NLP) with Recurrent Neural Networks (RNN) and Attention**22.1. Text Generation using RNN**

- 22.1.1. Training an RNN for Text Generation
- 22.1.2. Natural Language Generation with RNN
- 22.1.3. Text Generation Applications with RNN

22.2. Training Data Set Creation

- 22.2.1. Preparation of the Data for Training an RNN
- 22.2.2. Storage of the Training Dataset
- 22.2.3. Data Cleaning and Transformation
- 22.2.4. Sentiment Analysis

22.3. Classification of Opinions with RNN

- 22.3.1. Detection of Themes in Comments
- 22.3.2. Sentiment Analysis with Deep Learning Algorithms

22.4. Encoder-Decoder Network for Neural Machine Translation

- 22.4.1. Training an RNN for Machine Translation
- 22.4.2. Use of an Encoder-Decoder Network for Machine Translation
- 22.4.3. Improving the Accuracy of Machine Translation with RNNs

22.5. Attention Mechanisms

- 22.5.1. Application of Attention Mechanisms in RNN
- 22.5.2. Use of Attention Mechanisms to Improve the Accuracy of the Models
- 22.5.3. Advantages of Attention Mechanisms in Neural Networks

22.6. Transformer Models

- 22.6.1. Using Transformer Models for Natural Language Processing
- 22.6.2. Application of Transformer Models for Vision
- 22.6.3. Advantages of Transformer Models

22.7. Transformers for Vision

- 22.7.1. Use of Transformer Models for Vision
- 22.7.2. Image Data Preprocessing
- 22.7.3. Training a Transformer Model for Vision

22.8. Hugging Face's Library

- 22.8.1. Using Hugging Face's Transformers Library
- 22.8.2. Hugging Face's Transformers Library Application
- 22.8.3. Advantages of Hugging Face's Transformers Library

22.9. Other Transformers Libraries Comparison

- 22.9.1. Comparison Between Different Transformers Libraries
- 22.9.2. Use of the Other Transformers Libraries
- 22.9.3. Advantages of the Other Transformers Libraries

22.10. Development of an NLP Application with RNN and Attention. Practical Applications

- 22.10.1. Development of a Natural Language Processing Application with RNN and Attention
- 22.10.2. Use of RNN, Attention Mechanisms and Transformer Models in the Application
- 22.10.3. Evaluation of the Practical Application

Module 23. Autoencoders, GANs and diffusion models

23.1. Representation of Efficient Data

- 23.1.1. Dimensionality Reduction
- 23.1.2. Deep Learning
- 23.1.3. Compact Representations

23.2. PCA Realization with an Incomplete Linear Automatic Encoder

- 23.2.1. Training Process
- 23.2.2. Implementation in Python
- 23.2.3. Use of Test Data

23.3. Stacked Automatic Encoders

- 23.3.1. Deep Neural Networks
- 23.3.2. Construction of Coding Architectures
- 23.3.3. Use of Regularization

23.4. Convolutional Autoencoders

- 23.4.1. Design of Convolutional Models
- 23.4.2. Convolutional Model Training
- 23.4.3. Results Evaluation

23.5. Noise Suppression of Automatic Encoders

- 23.5.1. Filter Application
- 23.5.2. Design of Coding Models
- 23.5.3. Use of Regularization Techniques

23.6. Sparse Automatic Encoders

- 23.6.1. Increasing Coding Efficiency
- 23.6.2. Minimizing the Number of Parameters
- 23.6.3. Using Regularization Techniques

23.7. Variational Automatic Encoders

- 23.7.1. Use of Variational Optimization
- 23.7.2. Unsupervised Deep Learning
- 23.7.3. Deep Latent Representations

23.8. Generation of Fashion MNIST Images

- 23.8.1. Pattern Recognition
- 23.8.2. Image Generation
- 23.8.3. Deep Neural Networks Training

23.9. Generative Adversarial Networks and Diffusion Models

- 23.9.1. Content Generation from Images
- 23.9.2. Modeling of Data Distributions
- 23.9.3. Use of Adversarial Networks

23.10. Implementation of the Models

- 23.10.1. Practical Application
- 23.10.2. Implementation of the Models
- 23.10.3. Use of Real Data
- 23.10.4. Results Evaluation

Module 24. Natural Language Processing (NLP) with Recurrent Neural Networks (RNN) and Attention**24.1. Introduction to Bio-Inspired Computing**

24.1.1. Introduction to Bio-Inspired Computing

24.2. Social Adaptation Algorithms24.2.1. Bio-Inspired Computation Based on Ant Colonies
24.2.2. Variants of Ant Colony Algorithms
24.2.3. Particle Cloud Computing**24.3. Genetic Algorithms**24.3.1. General Structure
24.3.2. Implementations of the Major Operators**24.4. Space Exploration-Exploitation Strategies for Genetic Algorithms**24.4.1. CHC Algorithm
24.4.2. Multimodal Problems**24.5. Evolutionary Computing Models (I)**24.5.1. Evolutionary Strategies
24.5.2. Evolutionary Programming
24.5.3. Algorithms Based on Differential Evolution**24.6. Evolutionary Computation Models (II)**24.6.1. Evolutionary Models Based on Estimation of Distributions (EDA)
24.6.2. Genetic Programming**24.7. Evolutionary Programming Applied to Learning Problems**24.7.1. Rules-Based Learning
24.7.2. Evolutionary Methods in Instance Selection Problems**24.8. Multi-Objective Problems**24.8.1. Concept of Dominance
24.8.2. Application of Evolutionary Algorithms to Multi-Objective Problems**24.9. Neural Networks (I)**24.9.1. Introduction to Neural Networks
24.9.2. Practical Example with Neural Networks**24.10. Neural Networks (II)**24.10.1. Use Cases of Neural Networks in Medical Research
24.10.2. Use Cases of Neural Networks in Economics
24.10.3. Use Cases of Neural Networks in Artificial Vision

Module 25. Artificial Intelligence: Strategies and Applications

25.1. Financial Services

- 25.1.1. The Implications of Artificial Intelligence (AI) in Financial Services Opportunities and Challenges
- 25.1.2. Case Uses
- 25.1.3. Potential Risks Related to the Use of AI
- 25.1.4. Potential Future Developments/Uses of AI

25.2. Implications of Artificial Intelligence in the Healthcare Service

- 25.2.1. Implications of AI in the Healthcare Sector Opportunities and Challenges
- 25.2.2. Case Uses

25.3. Risks Related to the Use of AI in the Healthcare Service

- 25.3.1. Potential Risks Related to the Use of AI
- 25.3.2. Potential Future Developments/Uses of AI

25.4. Retail

- 25.4.1. Implications of AI in Retail. Opportunities and Challenges
- 25.4.2. Case Uses
- 25.4.3. Potential Risks Related to the Use of AI
- 25.4.4. Potential Future Developments/Uses of AI

25.5. Industry

- 25.5.1. Implications of AI in Industry Opportunities and Challenges
- 25.5.2. Case Uses

25.6 Potential Risks Related to the Use of AI in Industry

- 25.6.1. Case Uses
- 25.6.2. Potential Risks Related to the Use of AI
- 25.6.3. Potential Future Developments/Uses of AI

25.7. Public Administration

- 25.7.1. AI Implications for Public Administration Opportunities and Challenges
- 25.7.2. Case Uses
- 25.7.3. Potential Risks Related to the Use of AI
- 25.7.4. Potential Future Developments/Uses of AI

25.8. Educational

- 25.8.1. AI Implications for Education Opportunities and Challenges
- 25.8.2. Case Uses
- 25.8.3. Potential Risks Related to the Use of AI
- 25.8.4. Potential Future Developments/Uses of AI

25.9. Forestry and Agriculture

- 25.9.1. Implications of AI in Forestry and Agriculture. Opportunities and Challenges
- 25.9.2. Case Uses
- 25.9.3. Potential Risks Related to the Use of AI
- 25.9.4. Potential Future Developments/Uses of AI

25.10 Human Resources

- 25.10.1. Implications of AI for Human Resources Opportunities and Challenges
- 25.10.2. Case Uses
- 25.10.3. Potential Risks Related to the Use of AI
- 25.10.4. Potential Future Developments/Uses of AI

Module 26. Data Analysis and Application of AI Techniques for Educational Personalization**26.1. Identification, Extraction and Preparation of Educational Data**

- 26.1.1. Application of H2O.ai in the Collection and Selection of Relevant Data in Educational Settings
- 26.1.2. Data Cleaning and Normalization Techniques for Educational Analysis
- 26.1.3. Importance of Data Integrity and Quality in Educational Research

26.2. Analysis and Evaluation of Educational Data with AI for Continuous Improvement in the Classroom

- 26.2.1. Implementation of TensorFlow in the Interpretation of Educational Trends and Patterns using Machine Learning Techniques
- 26.2.2. Evaluating the Impact of Pedagogical Strategies using Data Analytics
- 26.2.3. Application of Trinka in AI-Based Feedback for the Optimization of the Teaching Process

26.3. Definition of Academic Performance Indicators from Educational Data

- 26.3.1. Establishment of Key Metrics for Evaluating Student Achievement
- 26.3.2. Comparative Analysis of Indicators to Identify Areas for Improvement
- 26.3.3. Correlation Between Academic Indicators and External Factors Using AI

26.4. AI Tools for Educational Decision Making and Monitoring

- 26.4.1. Decision Support Systems Based on Tome.ai for Educational Administrators
- 26.4.2. Using Trello for Educational Resource Planning and Allocation of Educational Resources
- 26.4.3. Optimization of Educational Processes through Predictive Analytics with Orange Data Mining

26.5. AI Technologies and Algorithms for Predictive Analysis of Academic Achievement Data

- 26.5.1. Fundamentals of Predictive Modeling in Education
- 26.5.2. Use of Classification and Regression Algorithms to Predict Trends in Education
- 26.5.3. Case Studies of Successful Predictions in Educational Environments

26.6. Application of Data Analytics with AI for the Prevention and Solution of Educational Problems

- 26.6.1. Early Identification of Academic Risks through Predictive Analytics
- 26.6.2. Data-Driven Intervention Strategies to Address Educational Challenges
- 26.6.3. Assessment of the Impact of Solutions Based on DataRobot AI in Education

26.7. Personalized Diagnosis of Learning Difficulties from Data Analytics with AI

- 26.7.1. AI Techniques for the Identification of Learning Styles and Difficulties with IBM Watson Education
- 26.7.2. Integration of Data Analysis into Individualized Educational Support Plans
- 26.7.3. Case Studies of Diagnoses Improved by the Use of AI

26.8. Data Analysis and Application of AI for Identification of Special Educational Needs

- 26.8.1. AI Approaches for the Detection of Special Educational Needs with Gooroo
- 26.8.2. Personalization of Teaching Strategies Based on Data Analysis
- 26.8.3. Evaluation of the Impact of AI on Educational Inclusion

26.9. Personalization of Learning with AI from Academic Performance Data Analysis

- 26.9.1. Creation of Adaptive Learning Paths using Smart Sparrow
- 26.9.2. Implementation of Recommender Systems for Educational Resources
- 26.9.3. Individual Progress Measurement and Real-Time Adjustments through Squirrel AI Learning

26.10. Security and Privacy in the Processing of Educational Data

- 26.10.1. Ethical and Legal Principles in the Management of Educational Data
- 26.10.2. Data Protection Techniques and Privacy in Educational Systems with Google Cloud Security
- 26.10.3. Case Studies on Security Breaches and their Impact on Education

Module 27. Development of Artificial Intelligence Projects in the Classroom

27.1. Planning and Design of AI Projects in Education with

- 27.1.1. First Steps to Plan the Project
- 27.1.2. Knowledge Bases
- 27.1.3. Design of AI Projects in Education

27.2. Tools for the Development of Educational Projects with AI

- 27.2.1. Tools for the Development of Educational Projects:
TensorFlow Playground
- 27.2.2. Tools for Educational Projects in History
- 27.2.3. Tools for Educational Projects in Mathematics: Wolfram Alpha
- 27.2.4. Tools for Educational Projects in English: Grammarly

27.3. Strategies for Implementing AI Projects in the Classroom

- 27.3.1. When to Implement an AI Project
- 27.3.2. Why Implement an AI Project
- 27.3.3. Strategies to be Implemented

27.4. Integration of AI Projects in Specific Subjects

- 27.4.1. Mathematics and AI: Thinkster Math
- 27.4.2. History and AI
- 27.4.3. Languages and AI: Deep L
- 27.4.4. Other Subjects: Watson Studio

27.5. Project 1: Development of Educational Projects Using Machine Learning with Khan Academy

- 27.5.1. First Steps
- 27.5.2. Requirements
- 27.5.3. Tools to be Used
- 27.5.4. Project Definition

27.6. Project 2: Integration of AI in the Development of Educational Games

- 27.6.1. First Steps
- 27.6.2. Requirements
- 27.6.3. Tools to be Used
- 27.6.4. Project Definition

27.7. Project 3: Development of Educational for Student Assistance

- 27.7.1. First Steps
- 27.7.2. Requirements
- 27.7.3. Tools to be Used
- 27.7.4. Project Definition

27.8. Project 4: Integration of Intelligent Agents in Educational Platforms With

- 27.8.1. First Steps
- 27.8.2. Requirements
- 27.8.3. Tools to be Used
- 27.8.4. Project Definition

27.9. Evaluation and Impact Measurement of AI Projects in Education with

- 27.9.1. Benefits of Working with AI in the Classroom
- 27.9.2. Actual Data
- 27.9.3. AI in the Classroom
- 27.9.4. AI Statistics in Education

27.10. Analysis and Continuous Improvement of Projects in Education with Edmodo

- 27.10.1. Current Projects
- 27.10.2. Commissioning
- 27.10.3. What the Future Holds
- 27.10.4. Transforming the Aulas 360

Module 28. Teaching Practice with Generative Artificial Intelligence**28.1. Generative AI Technologies for Use in Education**

- 28.1.1. Current Market: Artbreeder, Runway ML and DeepDream Generator
- 28.1.2. Technologies in Use
- 28.1.3. What is to Come
- 28.1.4. The Future of the Classroom

28.2. Application of Generative AI Tools in Educational Planning

- 28.2.1. Planning Tools:
Altitude Learning
- 28.2.2. Tools and their Application
- 28.2.3. Education and AI
- 28.2.4. Evolution

28.3. Creation of Didactic Materials with Generative AI Using , and

- 28.3.1. AI and Its Uses in the Classroom
- 28.3.2. Tools to Create Didactic Material
- 28.3.3. How to Work with the Tools
- 28.3.4. Commands

28.4. Development of Evaluation Tests using Generative AI with Quizgecko

- 28.4.1. AI and Its Uses in the Development of Evaluation Tests
- 28.4.2. Tools for the Development of Evaluation Tests
- 28.4.3. How to Work with the Tools
- 28.4.4. Commands

28.5. Enhanced Feedback and Communication with Generative AI

- 28.5.1. AI in Communication
- 28.5.2. Application of Tools in the Development of Communication in the Classroom
- 28.5.3. Advantages and Disadvantages

28.6. Correction of Evaluative Activities and Tests Using Generative AI with Grandscope AI

- 28.6.1. AI and its Uses in the Correction of Evaluative Activities and Tests
- 28.6.2. Tools for the Correction of Evaluative Activities and Tests
- 28.6.3. How to Work with the Tools
- 28.6.4. Commands

28.7. Generation of Teacher Quality Assessment Surveys through Generative AI

- 28.7.1. AI and Its Uses in the Generation of Teaching Quality Assessment Surveys using AI
- 28.7.2. Tools for the Generation of AI-Based Teacher Quality Surveys
- 28.7.3. How to Work with the Tools
- 28.7.4. Commands

28.8. Integration of Generative AI Tools in Pedagogical Strategies

- 28.8.1. Applications of AI in Pedagogical Strategies
- 28.8.2. Correct Uses
- 28.8.3. Advantages and Disadvantages
- 28.8.4. Generative AI Tools in Pedagogical Strategies: Gans

28.9. Use of Generative AI for Universal Design for Learning

- 28.9.1. Generative AI, Why Now?
- 28.9.2. AI in Learning
- 28.9.3. Advantages and Disadvantages
- 28.9.4. Applications of AI in Learning

28.10. Evaluation of the Effectiveness of Generative AI in Education

- 28.10.1. Effectiveness Data
- 28.10.2. Projects
- 28.10.3. Design Purposes
- 28.10.4. Evaluating the Effectiveness of AI in Education

Module 29. Innovations and Emerging Trends in AI for Education

29.1. Emerging AI Tools and Technologies in Education

- 29.1.1. Obsolete AI Tools
- 29.1.2. Current Tools: ClassDojo and Seesaw
- 29.1.3. Future Tools

29.2. Augmented and Virtual Reality in Education

- 29.2.1. Augmented Reality Tools
- 29.2.2. Virtual Reality Tools
- 29.2.3. Application of Tools and their Uses
- 29.2.4. Advantages and Disadvantages

29.3. Conversational AI for Educational Support and Interactive Learning with Wysdom AI and

- 29.3.1. Conversational AI, Why Now?
- 29.3.2. AI in Learning
- 29.3.3. Advantages and Disadvantages
- 29.3.4. Applications of AI in Learning

29.4. Application of AI for Improving Knowledge Retention

- 29.4.1. AI as a Support Tool
- 29.4.2. Guidelines to Follow
- 29.4.3. AI Performance in Knowledge Retention
- 29.4.4. AI and Support Tools

29.5. Facial and Emotional Recognition Technologies to Track Student Participation and Well-Being of Students

- 29.5.1. Facial and Emotional Recognition Technologies on the Market Today
- 29.5.2. Uses
- 29.5.3. Applications
- 29.5.4. Margin of Error
- 29.5.5. Advantages and Disadvantages

29.6. Blockchain and AI in Education to Transform Educational Administration and Certification

- 29.6.1. What is Blockchain
- 29.6.2. Blockchain and Its Applications
- 29.6.3. Blockchain as a Transformative Element
- 29.6.4. Educational Administration and Blockchain

29.7. Emerging AI Tools to Enhance the Learning Experience with Squirrel AI Learning

- 29.7.1. Current Projects
- 29.7.2. Commissioning
- 29.7.3. What the Future Holds
- 29.7.4. Transforming the Aulas 360

29.8. Strategies for Developing Pilots with Emerging AI

- 29.8.1. Advantages and Disadvantages
- 29.8.2. Strategies to be Developed
- 29.8.3. Key Points
- 29.8.4. Pilot Projects

29.9. Analysis of Successful AI Innovation Cases

- 29.9.1. Innovative Projects
- 29.9.2. Application of AI and Its Benefits
- 29.9.3. AI in the Classroom, Successful Cases

29.10. Future of AI in Education

- 29.10.1. AI History in Education
- 29.10.2. Where is AI going in the Classroom?
- 29.10.3. Future Projects

Module 30. Ethics and Legislation of Artificial Intelligence in Education
30.1. Identification and Ethical Treatment of Sensitive Data in the Educational Context

- 30.1.1. Principles and Practices for the Ethical Handling of Sensitive Data in Education
- 30.1.2. Challenges in Protecting the Privacy and Confidentiality of Student Data
- 30.1.3. Strategies for Ensure Transparency and Informed Consent in Data Collection

30.2. Social and Cultural Impact of AI in Education

- 30.2.1. Analysis of the Effect of AI on Social and Cultural Dynamics in Educational Environments
- 30.2.2. Exploration of how Microsoft AI for Accessibility can Perpetuate or Mitigate Social Biases and Inequalities
- 30.2.3. Assessment of the Social Responsibility of Developers and Educators in the implementation of AI

30.3. AI Legislation and Data Policy in Educational Settings

- 30.3.1. Review of Current Data and Privacy Laws and Regulations Applicable to AI in Education
- 30.3.2. Impact of Data Policies on Educational Practice and Technological Innovation
- 30.3.3. Development of Institutional Policies for the Ethical Use of AI in Education with AI Ethics Lab

30.4. Assessment of the Ethical Impact of AI

- 30.4.1. Methods for Assessing the Ethical Implications of AI Applications in Education
- 30.4.2. Challenges in Measuring the Social and Ethical Impact of AI
- 30.4.3. Creation of Ethical Frameworks to Guide the Development and Use of AI in Education

30.5. Challenges and Opportunities of AI in Education

- 30.5.1. Identification of Major Ethical and Legal Challenges in the Use of AI in Education
- 30.5.2. Exploration of Opportunities to Improve Teaching and Learning through Squirrel AI Learning
- 30.5.3. Balance between Technological Innovation and Ethical Considerations in Education

30.6. Ethical Application of AI Solutions in the Educational Environment

- 30.6.1. Principles for Ethical Design and Deployment of AI Solutions in Education
- 30.6.2. Case Studies on Ethical Applications of AI in Different Educational Contexts
- 30.6.3. Strategies for Involving All Stakeholders in Ethical AI Decision-Making

30.7. AI, Cultural Diversity and Gender Equity

- 30.7.1. Analysis of the Impact of AI on the Promotion of Cultural Diversity and Gender Equity in Education
- 30.7.2. Strategies for Developing Inclusive and Diversity-Sensitive AI Systems with Teachable Machine by Google
- 30.7.3. Assessment of How AI can Influence the Representation and Treatment of Different Cultural and Gender Groups

30.8. Ethical Considerations for the Use of AI Tools in Education

- 30.8.1. Ethical Guidelines for the Development and Use of AI Tools in the Classroom
- 30.8.2. Discussion on the Balance between Automation and Human Intervention in Education
- 30.8.3. Analysis of Cases where the Use of AI in Education has Raised Significant Ethical Issues

30.9. Impact of AI on Educational Accessibility

- 30.9.1. Exploration of How AI can Enhance or Limit Accessibility in Education
- 30.9.2. Analysis of AI Solutions Designed to Increase Inclusion and Access to Education for all with Google Read Along
- 30.9.3. Ethical Challenges in Implementing AI Technologies to Improve Accessibility

30.10. Global Case Studies in AI and Education

- 30.10.1. Analysis of International Case Studies on the Use of AI in Education
- 30.10.2. Comparison of Ethical and Legal Approaches in Different Educational Cultural Contexts
- 30.10.3. Lessons Learned and Best Practices from Global Cases in AI and Education

07

Methodology

This academic program offers students a different way of learning. Our methodology uses a cyclical learning approach: **Relearning**.

This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the **New England Journal of Medicine** have considered it to be one of the most effective.





“

Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"

TECH Business School uses the Case Study to contextualize all content

Our program offers a revolutionary approach to developing skills and knowledge. Our goal is to strengthen skills in a changing, competitive, and highly demanding environment.

“

At TECH, you will experience a learning methodology that is shaking the foundations of traditional universities around the world”



This program prepares you to face business challenges in uncertain environments and achieve business success.



A learning method that is different and innovative

This TECH program is an intensive educational program, created from scratch to present executives with challenges and business decisions at the highest level, whether at the national or international level. This methodology promotes personal and professional growth, representing a significant step towards success. The case method, a technique that lays the foundation for this content, ensures that the most current economic, social and business reality is taken into account.

“

You will learn, through collaborative activities and real cases, how to solve complex situations in real business environments”

The case method has been the most widely used learning system among the world's leading business schools for as long as they have existed. The case method was developed in 1912 so that law students would not only learn the law based on theoretical content. It consisted of presenting students with real-life, complex situations for them to make informed decisions and value judgments on how to resolve them. In 1924, Harvard adopted it as a standard teaching method.

What should a professional do in a given situation? This is the question we face in the case method, an action-oriented learning method. Throughout the program, the studies will be presented with multiple real cases. They must integrate all their knowledge, research, argue and defend their ideas and decisions.

Our program prepares you to face new challenges in uncertain environments and achieve success in your career.

Relearning Methodology

TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines different teaching elements in each lesson.

We enhance the Case Study with the best 100% online teaching method: Relearning.

Our online system will allow you to organize your time and learning pace, adapting it to your schedule. You will be able to access the contents from any device with an internet connection.

At TECH you will learn using a cutting-edge methodology designed to train the executives of the future. This method, at the forefront of international teaching, is called Relearning.

Our online business school is the only one in the world licensed to incorporate this successful method. In 2019, we managed to improve our students' overall satisfaction levels (teaching quality, quality of materials, course structure, objectives...) based on the best online university indicators.



In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically.

With this methodology we have trained more than 650,000 university graduates with unprecedented success in fields as diverse as biochemistry, genetics, surgery, international law, management skills, sports science, philosophy, law, engineering, journalism, history, markets, and financial instruments. All this in a highly demanding environment, where the students have a strong socio-economic profile and an average age of 43.5 years.

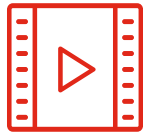
Relearning will allow you to learn with less effort and better performance, involving you more in your specialization, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation to success.

From the latest scientific evidence in the field of neuroscience, not only do we know how to organize information, ideas, images and memories, but we know that the place and context where we have learned something is fundamental for us to be able to remember it and store it in the hippocampus, to retain it in our long-term memory.

In this way, and in what is called neurocognitive context-dependent e-learning, the different elements in our program are connected to the context where the individual carries out their professional activity.



This program offers the best educational material, prepared with professionals in mind:



Study Material

All teaching material is produced by the specialists who teach the course, specifically for the course, so that the teaching content is highly specific and precise.

These contents are then applied to the audiovisual format, to create the TECH online working method. All this, with the latest techniques that offer high quality pieces in each and every one of the materials that are made available to the student.



Classes

There is scientific evidence suggesting that observing third-party experts can be useful.

Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.



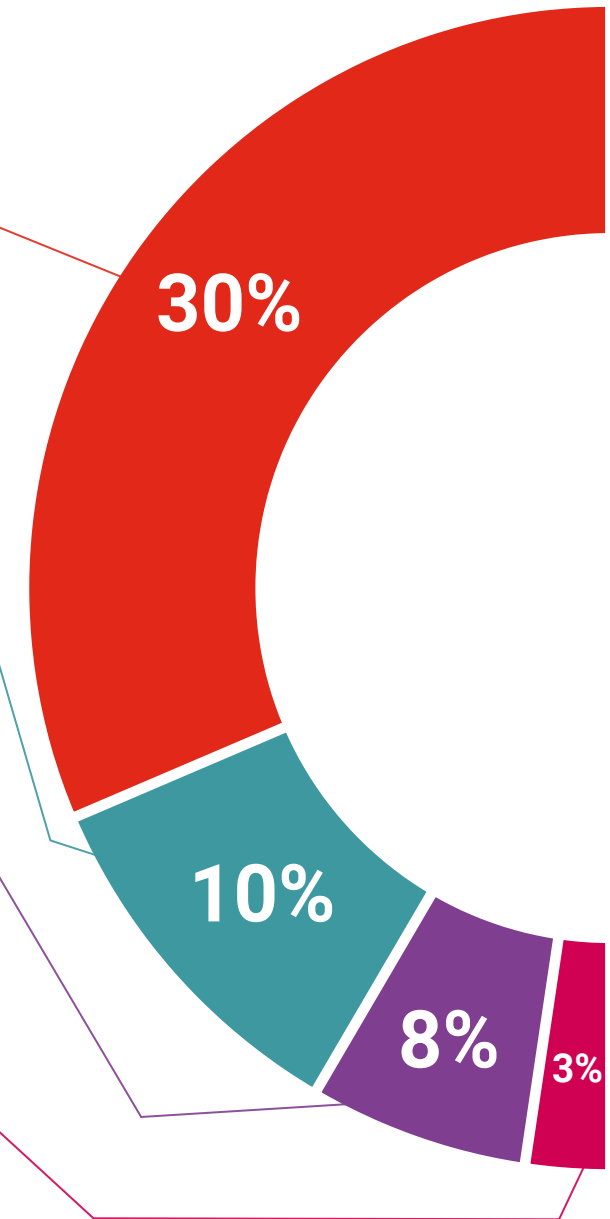
Management Skills Exercises

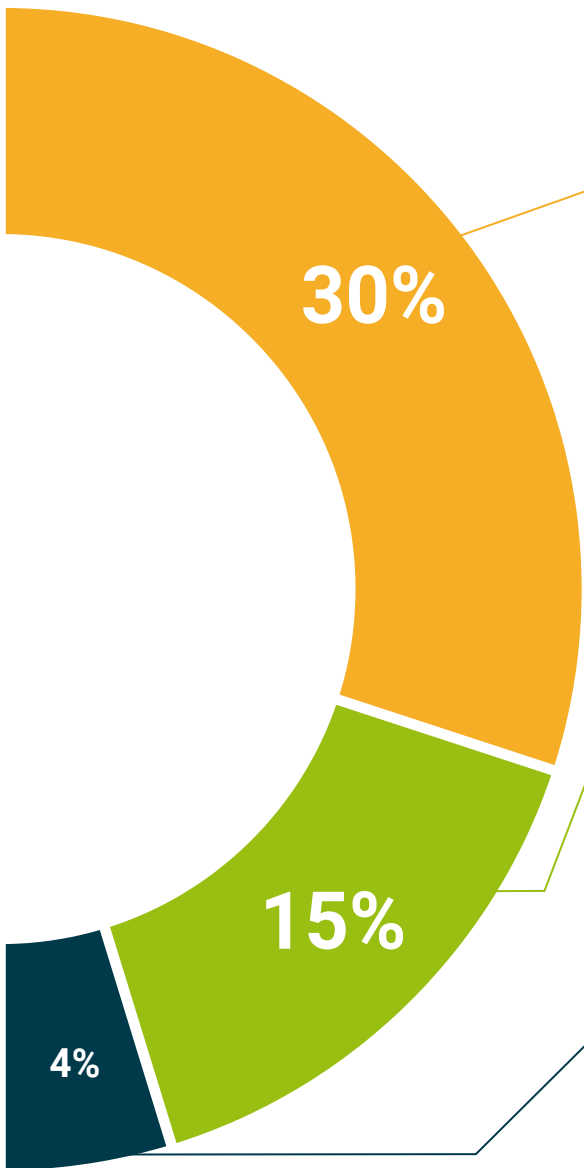
They will carry out activities to develop specific executive competencies in each thematic area. Practices and dynamics to acquire and develop the skills and abilities that a high-level manager needs to develop in the context of the globalization we live in.



Additional Reading

Recent articles, consensus documents and international guidelines, among others. In TECH's virtual library, students will have access to everything they need to complete their course.





Case Studies

Students will complete a selection of the best case studies chosen specifically for this program. Cases that are presented, analyzed, and supervised by the best senior management specialists in the world.



Interactive Summaries

The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



Testing & Retesting

We periodically evaluate and re-evaluate students' knowledge throughout the program, through assessment and self-assessment activities and exercises, so that they can see how they are achieving their goals.



08

Our Students' Profiles

The profile of TECH students stands out for its multidisciplinary nature, coming from various professional backgrounds. Most of the students have a solid background in Education Sciences and wish to remain at the forefront of technology. Therefore, they want to master the tools of Artificial Intelligence to implement them in their educational projects and optimize classroom experiences.





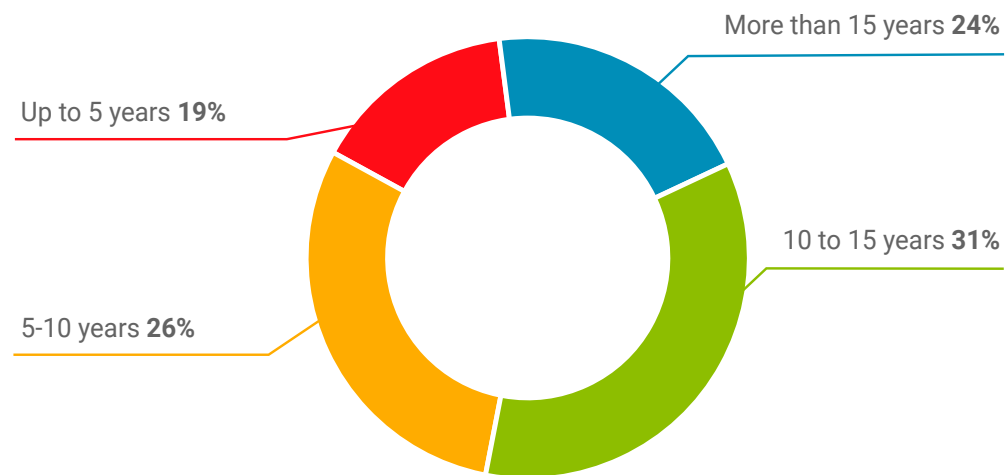
“

This university program is intended for professionals who wish to acquire the necessary skills to lead and manage educational projects based on Artificial Intelligence”

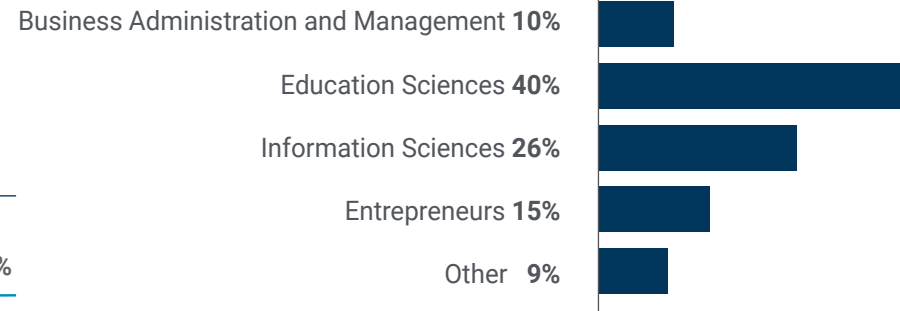
Average Age

Between **35** and **45** years old

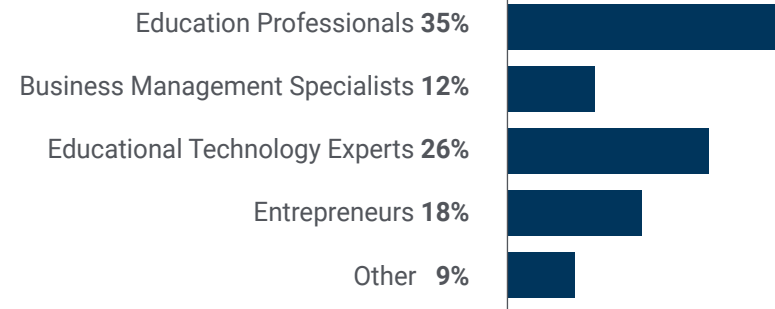
Years of Experience



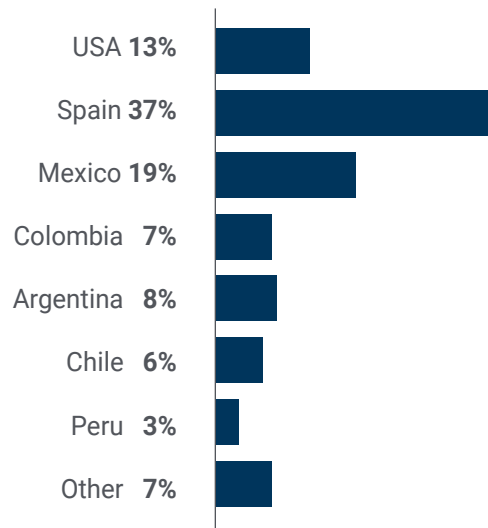
Training



Academic Profile



Geographical Distribution



Adrian Fernandez

Teacher and Entrepreneur

"I am deeply grateful for the opportunity to have completed my MBA in Artificial Intelligence in Education. The knowledge gained and skills developed during this program have been invaluable to my professional growth"

09

Course Management

For the design and delivery of this Advanced Master's Degree, TECH has a first class teaching staff. These professionals are highly specialized in Artificial Intelligence, which has allowed them to be part of prestigious educational institutions. In this way, these experts have contributed multiple innovative solutions aimed at optimizing the teaching experience. Therefore, students in this academic pathway will enjoy cutting-edge teaching materials with maximum applicability to the labor market.



“

An excellent teaching staff specialized in Artificial Intelligence provides you with a quality university program with a first-class theoretical and practical approach”

International Guest Director

With over 20 years of experience in designing and leading global **talent acquisition teams**, Jennifer Dove is an expert in **technology recruitment** and **strategy**. Throughout her career, she has held senior positions in several technology organizations within *Fortune 50*, such as **NBCUniversal** and **Comcast**. Her track record has allowed her to excel in competitive, high-growth environments.

As **Vice President of Talent Acquisition** en **Mastercard**, she is responsible for overseeing talent onboarding strategy and execution, collaborating with business leaders and **Human Resources** managers to meet operational and strategic hiring objectives. In particular, she aims to **build diverse, inclusive and high-performing teams** that drive innovation and growth of the company's products and services. In addition, she is adept at using tools to attract and retain the best people from around the world. She is also responsible for **amplifying** Mastercard's **employer brand** and value **proposition** through publications, events and social media.

Jennifer Dove has demonstrated her commitment to continuous professional development by actively participating in networks of **Human Resources** professionals and contributing to the onboarding of numerous employees at different companies. After earning her bachelor's degree in **Organizational Communication** from the University of Miami, she has held senior recruiting positions at companies in a variety of fields.

On the other hand, she has been recognized for her ability to lead organizational transformations, **integrate technologies** in **recruitment processes** and develop leadership programs that prepare institutions for future challenges. She has also successfully implemented **wellness programs** that have significantly increased employee satisfaction and retention.



Ms. Dove, Jennifer

- Vice President of Talent Acquisition at Mastercard, New York, United States
- Director of Talent Acquisition at NBCUniversal Media, New York, USA
- Head of Recruitment at Comcast
- Director of Recruiting at Rite Hire Advisory, New York, USA
- Executive Vice President of the Sales Division at Ardor NY Real Estate
- Director of Recruitment at Valerie August & Associates
- Account Executive at BNC
- Account Executive at Vault
- Graduated in Organizational Communication from the University of Miami.

“

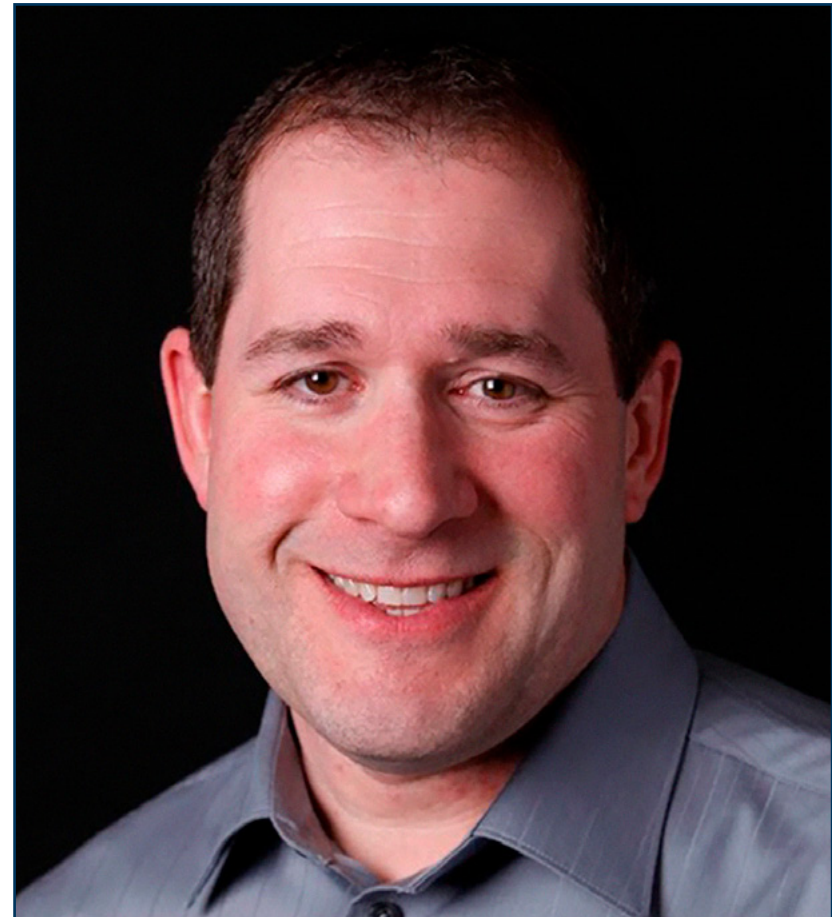
Thanks to TECH you will be able to learn with the best professionals in the world"

International Guest Director

A technology leader with decades of experience in major technology multinationals, Rick Gauthier has developed prominently in the field of cloud services and end-to-end process improvement. He has been recognized as a leader and manager of highly efficient teams, showing a natural talent for ensuring a high level of engagement among his employees.

He possesses innate gifts in strategy and executive innovation, developing new ideas and backing his success with quality data. His background at Amazon has allowed him to manage and integrate the company's IT services in the United States. At Microsoft he has led a team of 104 people, responsible for providing corporate-wide IT infrastructure and supporting product engineering departments across the company.

This experience has allowed him to stand out as a high-impact manager with remarkable abilities to increase efficiency, productivity and overall customer satisfaction.



Mr. Gauthier, Rick

- Regional IT Director at Amazon, Seattle, USA
- Senior Program Manager at Amazon
- Vice President of Wimmer Solutions
- Senior Director of Productive Engineering Services at Microsoft
- Degree in Cybersecurity from Western Governors University
- Technical Certificate in Commercial Diving from Divers Institute of Technology
- B.S. in Environmental Studies from The Evergreen State College

“

Take the opportunity to learn about the latest advances in this field in order to apply it to your daily practice”

International Guest Director

Romi Arman is a renowned international expert with more than two decades of experience in **Digital Transformation, Marketing, Strategy and Consulting**. Through that extended trajectory, he has taken different risks and is a permanent **advocate** for **innovation** and **change** in the business environment. With that expertise, he has collaborated with CEOs and corporate organizations from all over the world, pushing them to move away from traditional business models. In this way, he has helped companies such as Shell Energy become **true market leaders**, focused on their **customers** and the **digital world**.

The strategies designed by Arman have a latent impact, as they have enabled several corporations to **improve the experiences of consumers, staff and shareholders** alike. The success of this expert is quantifiable through tangible metrics such as **CSAT**, **employee engagement** in the institutions where he has practiced and the growth of the **EBITDA financial indicator** in each of them.

Also, in his professional career, he has nurtured and **led high-performance teams** that have even received awards for their **transformational potential**. With Shell, specifically, the executive has always set out to overcome three challenges: meeting **customers'** complex **decarbonization** demands **supporting** a “**cost-effective decarbonization**” and **overhauling** a fragmented **data, digital and technology landscape**. Thus, his efforts have shown that in order to achieve sustainable success, it is essential to start from the needs of consumers and lay the foundations for the transformation of processes, data, technology and culture.

In addition, the executive stands out for his mastery of the **business applications of Artificial Intelligence**, a subject in which he holds a postgraduate degree from the London Business School. At the same time, he has accumulated experience in **IoT** and **Salesforce**.



Mr. Arman, Romi

- ♦ Digital Transformation Director (CDO) at Shell Energy Corporation, London, UK
- ♦ Global Director of E-Commerce and Customer Service at Shell Energy Corporation
- ♦ National Key Account Manager (OEM and automotive retailers) for Shell in Kuala Lumpur, Malaysia
- ♦ Senior Management Consultant (Financial Services Sector) for Accenture based in Singapore
- ♦ Graduate of the University of Leeds
- ♦ Graduate Diploma in Business Applications of AI for Senior Executives from London Business School
- ♦ CCXP Customer Experience Professional Certification
- ♦ IMD Executive Digital Transformation Course

“

Do you want to update your knowledge with the highest educational quality? TECH offers you the most updated content in the academic market, designed by authentic experts of international prestige”

International Guest Director

Manuel Arens is an experienced data management professional and leader of a highly qualified team. In fact, Arens holds the position of global purchasing manager in Google's Technical Infrastructure and Data Center division, where he has spent most of his professional career. Based in Mountain View, California, he has provided solutions for the tech giant's operational challenges, such as master data integrity, vendor data updates and vendor prioritization . He has led data center supply chain planning and vendor risk assessment, generating improvements in vendor risk assessment, resulting in process improvements and workflow management that have resulted in significant cost savings.

With more than a decade of work providing digital solutions and leadership for companies in diverse industries, he has extensive experience in all aspects of strategic solution delivery, including marketing, media analytics, measurement and attribution. In fact, he has received a number of accolades for his work, including the BIM Leadership Award, the Search Leadership Award, the Lead Generation Export Program Award and the Export Lead Generation Program Award and the EMEA Best Sales Model Award.

Arens also served as Sales Manager in Dublin, Ireland. In this role, he built a team of 4 to 14 members over three years and led the sales team to achieve results and collaborate well with each other and cross-functional teams. He also served as Senior Industry Analyst, Hamburg, Germany, creating storylines for over 150 clients using internal and third party tools to support analysis. He developed and wrote in-depth reports to demonstrate his mastery of the subject matter, including understanding the macroeconomic and political/regulatory factors affecting technology adoption and diffusion.

He has also led teams at companies such as Eaton, Airbus and Siemens, where he gained valuable account management and supply chain experience. He is particularly noted for continually exceeding expectations by building valuable customer relationships and working seamlessly with people at all levels of an organization, including stakeholders, management, team members and customers. His data-driven approach and ability to develop innovative and scalable solutions to industry challenges have made him a prominent leader in his field.



Mr. Arens, Manuel

- Global Procurement Manager at Google, Mountain View, USA
- Senior Manager, B2B Analytics and Technology, Google, USA
- Sales Director - Google, Ireland
- Senior Industry Analyst at Google, Germany
- Accounts Manager - Google, Ireland
- Accounts Payable at Eaton, UK
- Supply Chain Manager at Airbus, Germany

“

Bet on TECH! You will have access to the best didactic materials, at the forefront of technology and education, implemented by internationally renowned specialists in the field”

International Guest Director

Andrea La Sala is an experienced Marketing executive whose projects have had a significant impact on the Fashion environment. Throughout his successful career he has developed different tasks related to Products, Merchandising and Communication. All of this linked to with prestigious brands such as Giorgio Armani, Dolce&Gabbana, Calvin Klein, among others.

The results of this high-profile international executive have been linked to his proven ability to synthesize information in clear frameworks and execute concrete actions aligned to specific business objectives. In addition, he is recognized for his proactivity and adaptability to fast-paced work rhythms. To all this, this expert adds a strong commercial awareness,, market vision and a genuine passion for products.

As Global Brand and Merchandising Director at Giorgio Armani, he has overseen a variety of Marketing strategies for apparel and accesories. His tactics have also focused on the retail environment and consumer needs and behavior. In this La Sala has also been responsible for shaping the commercialization of products in different markets, acting as team leader in the Design, Communication and Sales departments..

On the other hand, in companies such as Calvin Klein or Gruppo Coin, he has undertaken projects to boost the structure, and development of different collections. He has been in charge of creating effective calendars for buying and selling campaigns.

He has also been in charge of the terms, costs, processes and delivery times of different operations.

These experiences have made Andrea La Sala one of the main and most qualified corporate leaders in Fashion and Luxury. A high managerial capacity with which he has managed to effectively implement the positive positioning of different brands and redefine their key performance indicators (KPIs).



Mr. La Sala, Andrea

- ♦ Global Brand & Merchandising Director Armani Exchange at Giorgio Armani, Milan, Italy
- ♦ Merchandising Director at Calvin Klein
- ♦ Brand Manager at Gruppo Coin
- ♦ Brand Manager at Dolce&Gabbana
- ♦ Brand Manager at Sergio Tacchini S.p.A.
- ♦ Market Analyst at Fastweb
- ♦ Graduate of Business and Economics at Università degli Studi del Piemonte Orientale

“

The most qualified and experienced professionals at international level are waiting for you at TECH to offer you a first class teaching, updated and based on the latest scientific evidence. What are you waiting for to enroll?"

International Guest Director

Mick Gram is synonymous with innovation and excellence in the field of **Business Intelligence** internationally. His successful career is linked to leadership positions in multinationals such as **Walmart** and **Red Bull**. Likewise, this expert stands out for his vision to **identify emerging technologies** that, in the long term, achieve an everlasting impact in the corporate environment.

On the other hand, the executive is considered a **pioneer** in the **use of data visualization techniques** that simplified complex sets, making them accessible and facilitating decision making. This ability became the pillar of his professional profile, transforming him into a desired asset for many organizations that bet on **gathering information** and **generating concrete actions** from them.

One of his most outstanding projects in recent years has been the **Walmart Data Cafe platform**, the largest of its kind in the world that is anchored in the **cloud** aimed at **Big Data** analysis. In addition, he has held the position of **Director of Business Intelligence** at **Red Bull**, covering areas such as **Sales, Distribution, Marketing and Supply Chain Operations**. His team was recently recognized for its constant innovation regarding the use of Walmart Luminat's new API for Shopper and Channel insights.

As for his training, the executive has several Masters and postgraduate studies at prestigious centers such as the **University of Berkeley**, in the United States, and the **University of Copenhagen**, in Denmark. Through this continuous updating, the expert has attained cutting-edge competencies. Thus, he has come to be considered a **born leader** of the **new global economy**, centered on the drive for data and its infinite possibilities.



Mr. Gram, Mick

- ♦ Director of Business Intelligence and Analytics at Red Bull, Los Angeles, United States
- ♦ Business Intelligence Solutions Architect for Walmart Data Cafe
- ♦ Independent Business Intelligence and Data Science Consultant
- ♦ Director of Business Intelligence at Capgemini
- ♦ Senior Analyst at Nordea
- ♦ Senior Business Intelligence Consultant at SAS
- ♦ Executive Education in AI and Machine Learning at UC Berkeley College of Engineering
- ♦ Executive MBA in e-commerce at the University of Copenhagen
- ♦ B.Sc. and M.Sc. in Mathematics and Statistics at the University of Copenhagen

“

Study at the best online university in the world according to Forbes! In this MBA you will have access to an extensive library of multimedia resources, developed by internationally renowned professors”

International Guest Director

Scott Stevenson is a distinguished expert in the **Digital Marketing** sector who, for more than 19 years, has been linked to one of the most powerful companies in the entertainment industry, **Warner Bros. Discovery**. In this role, he has played a fundamental role in **overseeing logistics and creative workflows** across various digital platforms, including social media, search, display and linear media.

This executive's leadership has been crucial in driving in **production strategies in paid media**, resulting in a **marked improvement** which has resulted in **company's conversion rates**. At the same time, he has assumed other roles, such as Director of Marketing Services and Traffic Manager at the same multinational during his former management.

Stevenson has also been involved in the global distribution of video games and **digital property campaigns**. He was also responsible for introducing operational strategies related to the formation, completion and delivery of sound and image content for **television commercials and trailers**.

In addition, he holds a Bachelor's degree in Telecommunications from the University of Florida and a Master's Degree in Creative Writing from the University of California, which demonstrates his proficiency in **communication and storytelling**. In addition, he has participated at Harvard University's School of Professional Development in cutting-edge programs on the use of **Artificial Intelligence in business**. Therefore, his professional profile stands as one of the most relevant in the current field of **Marketing and Digital Media**.



Mr. Stevenson, Scott

- Director of Digital Marketing at Warner Bros. Discovery, Burbank, United States
- Traffic Manager at Warner Bros. Entertainment.
- M.A. in Creative Writing from the University of California
- B.S. in Telecommunications from the University of Florida

“

Achieve your academic and career goals with the best qualified experts in the world! The faculty of this MBA will guide you through the entire learning process”

International Guest Director

Eric Nyquist, is a leading international sports professional who has built an impressive career, noted for his **strategic leadership** and ability to drive change and **innovation** in **world-class** sports organizations.

In fact, he has held senior roles such as **Director of Communications and Impact** at **NASCAR**, based in **Florida, USA**. With many years of experience behind him at **NASCAR**, Dr. Nyquist has also held several leadership positions, including **Senior Vice President of Strategic Development** and **General Manager of Business Affairs**, managing more than a dozen disciplines ranging from **strategic development** to **entertainment marketing**.

Nyquist has also made a significant mark on **Chicago's top** sports franchises. As **Executive Vice President** of the **Chicago Bulls** and **Chicago White Sox** franchises, he has demonstrated his ability to drive **business** and **strategic success** in the world of **professional sports**.

Finally, it is worth noting that he began his career in **sports** while working in **New York** as a **senior strategic analyst** for **Roger Goodell** in the **National Football League (NFL)** and, prior to that, as a **Legal Intern** with the **United States Football Federation**.



Mr. Nyquist, Eric

- ♦ Director of Communications and Impact at NASCAR, Florida, USA
- ♦ Senior Vice President of Strategic Development at NASCAR, Florida, United States
- ♦ Vice President of Strategic Planning at NASCAR
- ♦ Senior Director of Business Affairs at NASCAR
- ♦ Executive Vice President at Chicago White Sox Franchises
- ♦ Executive Vice President at Chicago Bulls Franchises
- ♦ Manager of Business Planning at the National Football League (NFL)
- ♦ Business Affairs/Legal Intern with the United States Soccer Federation
- ♦ Law Degree from the University of Chicago
- ♦ Master's Degree in Business Administration-MBA from the University of Chicago Booth School of Business
- ♦ B.A. in International Economics from Carleton College.



Thanks to this university program, 100% online, you will be able to combine your studies with your daily obligations, under the guidance of the leading international experts in the field of your interest. Enroll now!"

Management



Dr. Peralta Martín-Palomino, Arturo

- ♦ CEO and CTO at Prometheus Global Solutions
- ♦ CTO at Korporate Technologies
- ♦ CTO at AI Shepherds GmbH
- ♦ Consultant and Strategic Business Advisor at Alliance Medical
- ♦ Director of Design and Development at DocPath
- ♦ PhD in Psychology from the University of Castilla La Mancha
- ♦ PhD in Economics, Business and Finance from the Camilo José Cela University
- ♦ PhD in Psychology from University of Castilla La Mancha
- ♦ Master's Degree in Executive MBA from the Isabel I University
- ♦ Master's Degree in Sales and Marketing Management, Isabel I University
- ♦ Expert Master's Degree in Big Data by Hadoop Training
- ♦ Master's Degree in Advanced Information Technologies from the University of Castilla La Mancha
- ♦ Member of: SMILE Research Group



Mr. Nájera Puente, Juan Felipe

- ♦ Director of Studies and Research at the Council for Quality Assurance in Higher Education.
- ♦ Data Analyst and Data Scientist
- ♦ Production Programmer at Confiteca C.A.
- ♦ Processes Consultant at Esefex Consulting
- ♦ Academic Planning Analyst at San Francisco de Quito University
- ♦ Master's Degree in Big Data and Data Science at the International University of Valencia.
- ♦ Industrial Engineer from San Francisco de Quito University

Professors

Ms. Martínez Cerrato, Yésica

- ♦ Responsible for Technical Training at Securitas Seguridad España
- ♦ Education, Business and Marketing Specialist
- ♦ Product Manager in Electronic Security at Securitas Seguridad España
- ♦ Business Intelligence Analyst at Ricopia Technologies
- ♦ Computer Technician and Responsible for OTEC computer classrooms at the University of Alcalá de Henares
- ♦ Collaborator in the ASALUMA Association
- ♦ Degree in Electronic Communications Engineering at the Polytechnic School, University of Alcalá de Henares.

10

Impact on Your Career

Thanks to this university program, graduates will have a wide range of job opportunities. Having a deep knowledge and skills in the management of Artificial Intelligence, students will implement its tools in the educational field to optimize the experience of students. Along the same lines, professionals will develop innovative proposals aimed at improving teaching processes and even educational administration. In this way, experts will be able to make the leap to educational institutions, technology companies or consultancies, among others.





“

Thanks to this pioneering Advanced Master's Degree, your company will remain at the forefront of educational innovation”

Are you ready to take the leap? Excellent professional development awaits you

The MBA in Artificial Intelligence in Education at TECH Global University is an intense program that prepares students to face challenges and business decisions, both nationally and internationally. Its main objective is to promote personal and professional growth Helping students achieve success.

Therefore, those who wish to improve themselves, achieve a positive change at a professional level and interact with the best, will find their place at TECH.

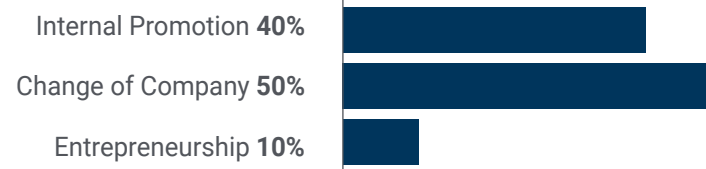
*Don't miss the opportunity to boost your career through this innovative program
Enroll now!*

Get updated in Artificial Intelligence in Education from the best experts in the field. Launch your professional career with TECH!

Time of Change

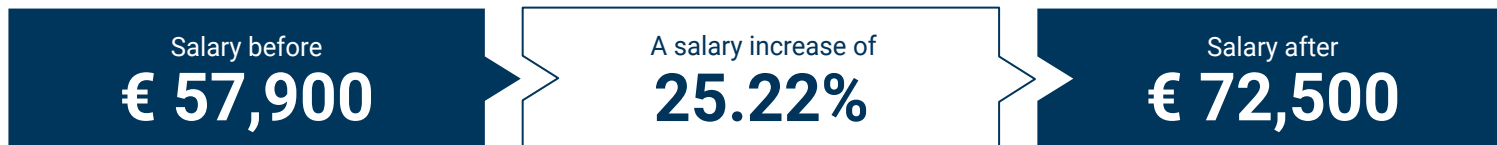


Type of change



Salary increase

This program represents a salary increase of more than **25.22%** for our students



11

Benefits for Your Company

Although the main objective of this university program is to increase students' knowledge, it is also designed with an eye to what graduates will bring to their respective companies. Professionals will master the most sophisticated Artificial Intelligence tools to design cutting-edge products or services capable of optimizing the student experience. For example, they will be able to develop virtual tutoring systems.

Experts will customize teaching processes according to the needs of each student, therefore adapting both content and resources. This will improve knowledge retention and student engagement, which in turn will benefit companies offering educational solutions.



“

Thanks to Artificial Intelligence, you will develop innovative services to improve the student learning experience, such as virtual tutoring systems”

Developing and retaining talent in companies is the best long-term investment.

01

Growth of talent and intellectual capital

The professional will introduce the company to new concepts, strategies, and perspectives that can bring about significant changes in the organization

02

Retaining high-potential executives to avoid talent drain

This program strengthens the link between the company and the professional and opens new avenues for professional growth within the company

03

Building agents of change

You will be able to make decisions in times of uncertainty and crisis, helping the organization overcome obstacles

04

Increased international expansion possibilities

Thanks to this program, the company will come into contact with the main markets in the world economy



05

Project Development

The professional can work on a real project or develop new projects in the field of R & D or business development of your company

06

Increased competitiveness

This program will equip students with the skills to take on new challenges and drive the organization forward

12 Certificate

The MBA in Artificial Intelligence in Education guarantees students, in addition to the most rigorous and up-to-date education, access to an Advanced Master's Degree issued by TECH Global University.



“

Successfully complete this program and receive your university qualification without having to travel or fill out laborious paperwork”

This private qualification will allow you to obtain an **MBA in Artificial Intelligence in Education** endorsed by **TECH Global University**, the world's largest online university.

TECH Global University, is an official European University publicly recognized by the Government of Andorra (*official bulletin*). Andorra is part of the European Higher Education Area (EHEA) since 2003. The EHEA is an initiative promoted by the European Union that aims to organize the international training framework and harmonize the higher education systems of the member countries of this space. The project promotes common values, the implementation of collaborative tools and strengthening its quality assurance mechanisms to enhance collaboration and mobility among students, researchers and academics.

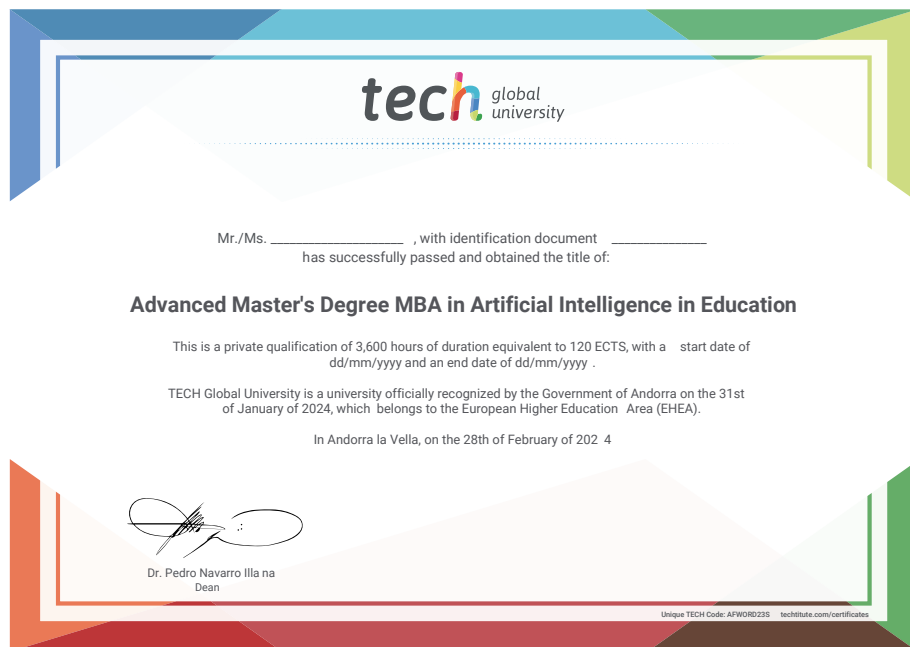
This **TECH Global University private qualification**, is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Advanced Master's Degree MBA in Artificial Intelligence in Education**

Modality: **online**

Duration: **2 years**

Accreditation: **120 ECTS**



*Apostille Convention. In the event that the student wishes to have their paper diploma issued with an apostille, TECH Global University will make the necessary arrangements to obtain it, at an additional cost.



Advanced Master's Degree MBA in Artificial Intelligence in Education

- » Modality: **online**
- » Duration: **2 years**
- » Certificate: **TECH Global University**
- » Accreditation: **120 ECTS**
- » Schedule: **at your own pace**
- » Exams: **online**

Advanced Master's Degree

MBA in Artificial Intelligence in Education