Advanced Master's Degree
MBA in Artificial Intelligence in Clinical Practice

A M D M B A A I C P

tech global university

Advanced Master's Degree
MBA in Artificial Intelligence in Clinical Practice

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

Website: **www.techtitute.com/us/school-of-business/advanced-master-degree/advanced-master-degree-artificial-intelligence-clinical-practice**

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01
Welcome

In a recent report, the World Health Organization recognizes the potential of Artificial Intelligence in the field of healthcare. This organization stresses that its technological tools contribute to the strengthening of clinical trials, while at the same time improving medical diagnoses and offering the opportunity to design personalized treatments. However, it urges professionals to make responsible use of these mechanisms and to address the risks involved for the safety of both patients and the environment. In this context, TECH presents a university program aimed at experts that will delve into the keys to the implementation of Artificial Intelligence in Clinical Practice. In addition, it is taught in a convenient 100% online format.

MBA in Artificial Intelligence in Clinical Practice
TECH Global University

You will have the most advanced techniques in Artificial Intelligence to diagnose diseases efficiently and early, helping to improve the quality of life of patients"

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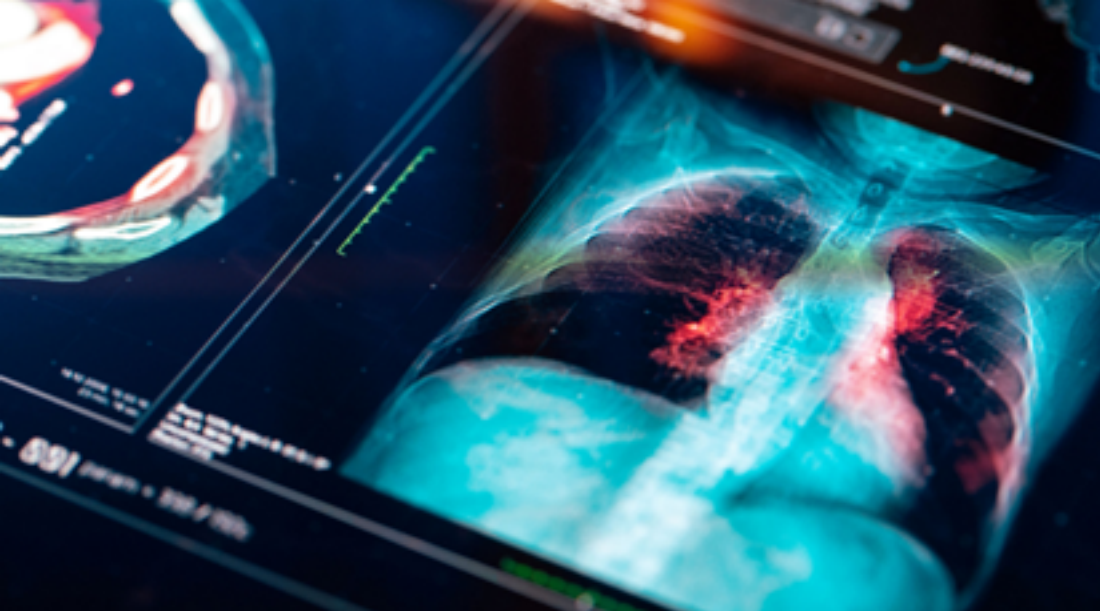
After completing this program, TECH helps students show the world their talent.

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.

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"

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 ground-breaking price**. This way, TECH ensures that studying is not as expensive for students as it would be at another university.

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 Technological University community.

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

Objectives

The premise of this Advanced Master's Degree is to equip professionals with the most innovative tools and techniques in Artificial Intelligence to implement them in their Clinical Practice. Through this program, graduates will master the fundamental principles of this rapidly expanding technological field, including aspects such as neural networks. In this way, they will apply these procedures to clinical environments to contribute significantly to the personalization of patient care, prediction of medical outcomes and data management. Specialists will also gain the skills to work with clinical data, develop predictive models and implement cutting-edge solutions with Artificial Intelligence.

A rigorous university program with a scientific vision with which you will delve into Bio-inspired Computing to solve optimization problems in a wide variety of fields such as Engineering"

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

The **MBA in Artificial Intelligence in Clinical Practice** enable the student to:

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

02 Develop the key leadership skills that should define working professionals

03 Delve into the the sustainability criteria set by international standards when developing abusiness plan

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

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
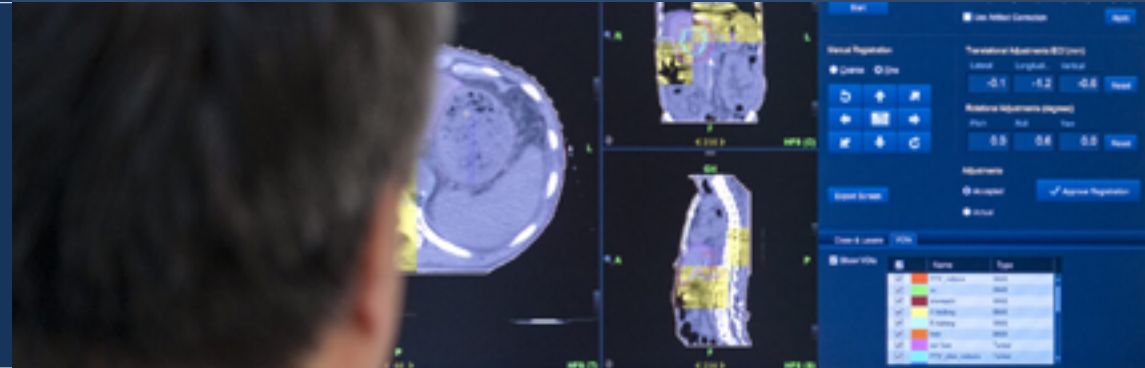
06 Differentiate the skills required to manage business activities strategically

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

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

13 Understand the logistic operations that are necessary in the business environment, so as to manage them appropriately

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

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

18 Create innovative strategies in line with different projects

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

17 Address workload distribution mechanisms of shared resources among several projects

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

21 Understand the theoretical foundations of Artificial Intelligence

22 Study the different types of data and understand the data lifecycle

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

24 Delve into algorithms and complexity to solve specific problems

25 Explore the theoretical basis of neural networks for Deep Learning development

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

28 Obtain a comprehensive view of the transformation of Clinical Research through AI, from its historical foundations to current applications

29 Learn effective methods for integrating heterogeneous data into clinical research, including natural language processing and advanced data visualization

27 Analyze current strategies of Artificial Intelligence in various fields, identifying opportunities and challenges

30 Acquire a solid understanding of model validation and simulations in the biomedical domain, exploring the use of synthetic datasets and practical applications of AI in health research

Skills

This Advanced Master's Degree will mark a before and after in the professional careers of graduates. Thanks to this university program, professionals will collect, clean and process large sets of clinical data using the most sophisticated tools of Artificial Intelligence. They will also gain practical skills to develop and evaluate predictive models using machine learning algorithms. In this way, experts will predict medical diagnoses, offer personalized treatments and analyze patient responses to applied therapies. They will also be highly qualified to develop innovative solutions, aimed at improving issues such as interventions based on Artificial Intelligence.

You will achieve your professional goals with this unique program, which will provide you with the technological skills most required by the market in the field of Clinical Practice"

01 Resolve business conflicts and problems between workers

04 Exercise economic and financial control of a company

02 Apply lean management methodologies

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

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
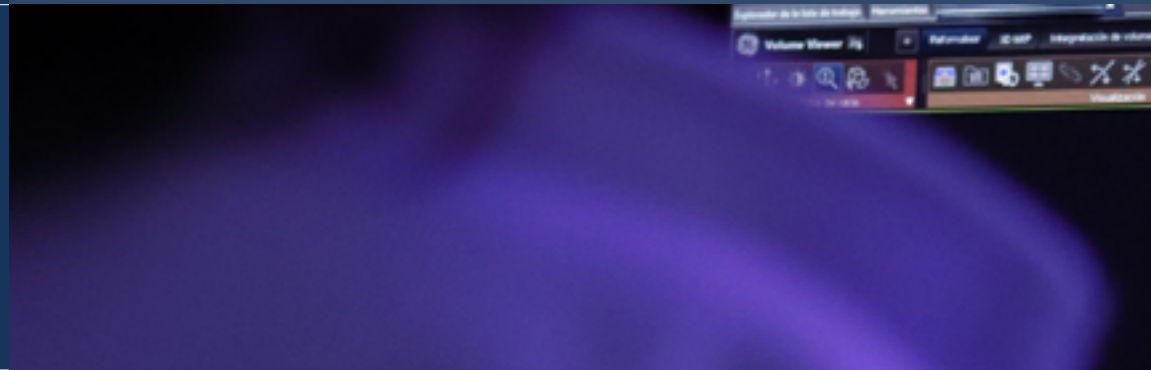
12 Focus on innovation in all processes and areas of the company

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
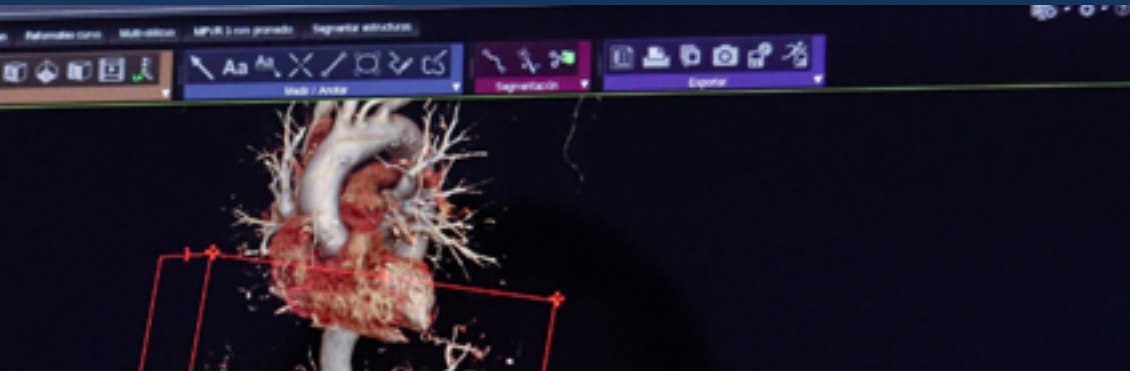
19 Implement an encoder-decoder network for neural machine translation

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

24 Investigate languages and software for the creation of ontologies, using specific tools for the development of semantic models

22 Apply computational models to simulate biological processes and treatment responses, using in AI to improve understanding of complex biomedical phenomena

23 Address contemporary challenges in the biomedical field, including the efficient management of clinical trials and the application of AI in immunology

25 Develop data cleaning techniques to ensure the quality and accuracy of the information used in subsequent analyses

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

28 Apply Genomic Sequencing Technologies and Data Analysis with Artificial Intelligence

29 Use AI in the analysis of biomedical images

27 Apply computational models to simulate biological processes, diseases and treatment responses, using tools and AI to improve understanding and representation of complex biomedical phenomena

30 Acquire skills in advanced visualization and effective communication of complex data, with a focus on the development of AI-based tools

Structure and Content

This MBA in Artificial Intelligence in Clinical Practice is comprised of 30 complete and up-to-date modules, which will offer top-quality teaching materials to provide students with a comprehensive understanding of the field. As such, the university program will include topics dedicated to algorithms, intelligent systems and machine learning. In this way, graduates will immediately apply these advanced techniques to their daily practice to enrich their projects. At the same time, the syllabus will address aspects such as neural networks, model training, deep computer vision or natural language processing.

You will go deeper into Data Mining to discover patterns or trends that are useful for the decision making process, thanks to this 100% online Advanced Master's Degree"

Syllabus

The MBA in Artificial Intelligence in Clinical Practice from 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 organizational competencies that allow for more rigorous decision making in uncertain environments.

Throughout this study, students will analyze a multitude of practical cases through individual work, achieving a high quality learning that can be applied, later, 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 and is designed for managers to understand its applicability in Clinical Practice 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 Artificial Intelligence in Clinical Practice. 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 skills to solve critical situations in a creative and efficient way.

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	Diagnosis in Clinical Practice using AI
Module 27	Treatment and Management of Patients with AI
Module 28	Personalization of Healthcare through AI
Module 29	Analysis of *Big Data* in the Health Sector with AI
Module 30	Ethics and Regulation in Medical AI

Where, When and How is it Taught?

TECH offers the possibility of developing this MBA in Artificial Intelligence in Clinical Practice completely online. During the 2 years that the specialization lasts, the student will be able to access all the contents of this program at any time, which will allow them to 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 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 Morals
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 Corporate Governance
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: Typology

2.2. Corporate Strategy
2.2.1. Competitive Corporate Strategy
2.2.2. Growth Strategies: Typology
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. Strategic Formulation: Process of Strategic Planning

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. 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 Management and Human Resources
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. Developing High Performance Teams
3.13.1. High Performance Teams: Self-Managed Teams
3.13.2. Methodologies for the Management of High Performance Self-Managed Teams

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
3.19.2. Prevention of Occupational Risks

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. Results Research

4.4. **Management 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 Cash Requirements
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 Activity
4.8.5. The Company as a Facilitator of the Work of the of the State

4.9. **Corporate Control Systems**
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 the Control 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. Analyzing and Solving 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

5.9. Supply Chain Management
5.9.1. The Concept of Management of the Supply Chain (SCM)
5.9.2. Costs and Efficiency of the Operations Chain
5.9.3. Demand Patterns
5.9.4. Operations Strategy and Change

5.10. Interactions Between the SCM and All Other Departments
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 Issues
5.10.4. Supply Chain

5.11. Logistics Costs
5.11.1. Logistics Costs
5.11.2. Problems with Logistics Costs
5.11.3. Optimizing Logistic Costs

5.12. Profitability and Efficiency of Logistics Chains: KPIS
5.12.1. Logistics Chain
5.12.2. Profitability and Efficiency of the Logistics Chain
5.12.3. Indicators Profitability and Efficiency of Logistics Chains

5.13. Process Management
5.13.1. Process Management
5.13.2. Process Based Focus: Process Mapping
5.13.3. Improvements in Process Management

5.14. Distribution and Transportation Logistics
5.14.1. Distribution in the Supply Chain
5.14.2. Transportation Logistics
5.14.3. Geographic Information Systems as a Support to Logistics

5.15. Logistics and Customers
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 (CPFR)

5.16. International Logistics
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

5.17. Outsourcing of Operations
5.17.1. Operations Management and Outsourcing
5.17.2. Outsourcing Implementation in Logistics Environments

5.18. Competitiveness in Operations
5.18.1. Operations Management
5.18.2. Operational Competitiveness
5.18.3. Operations Strategy and Competitive Advantages

5.19. Quality Management
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 in Companies
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 Technological 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. Balanced Scorecard (BSC)

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 Graphical 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 for 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. The Basic Elements of Marketing
7.2.3. Marketing Activities in Companies

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. Designing and Creating 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 in Launching 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 in Creating 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. Market 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. Execution Stages in Marketing Research
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, Briefing Concept 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. Operating Marketing Decisions

8.10. Promotion and Merchandising 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 Factors 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. Implementation of 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 from 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 Direction and Management:

9.5.1. Project Direction and 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. Change Management in Projects: Management of Training

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 Dialog 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 Life Cycle

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 their 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. Discreet 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 Big Data 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. Greedy 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 Feelings 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. Hidden Layer
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. Transfer Learning Training
19.2.2. Feature Extraction
19.2.3. Deep Learning

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

19.4. Programming 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. Graph 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 tfdata API
20.6.1. Using the tfdata API for Data Processing
20.6.2. Construction of Data Streams with tfdata
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. Loading TFRecord Files with TensorFlow
20.7.3. Using TFRecord Files for Training Models

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 Datasetsfor Data Loading
20.9.2. Pre-Processing Data with TensorFlow Datasets
20.9.3. Using TensorFlow Datasets for Model Training

20.10. Building a Deep Learning Application with TensorFlow
20.10.1. Practical Applications
20.10.2. Building a Deep Learning Application with TensorFlow
20.10.3. Model Training with TensorFlow
20.10.4. Use of 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. Segmentation Methods Based on Rules

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. Rating of Reviews 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 Care Mechanisms in NRN
22.5.2. Use of Care 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 Transformers Models for Natural Language Processing
22.6.2. Application of Transformers Models for Vision
22.6.3. Advantages of Transformers Models

22.7. Transformers for Vision
22.7.1. Use of Transformers Models for Vision
22.7.2. Image Data Preprocessing
22.7.3. Training a Transformers Model for Vision

22.8. Hugging Face's Transformers 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 Transformers 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. Trendy MNIST Image Generation
23.8.1. Pattern Recognition
23.8.2. Image Generation
23.8.3. Deep Neural Networks Training

23.9. Generative Adversarial Networks and Dissemination 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. Bio-Inspired Computing

24.1. Introduction to Bio-Inspired Computing
24.1.1. Introduction to Bio-Inspired Computing

24.2. Social Adaptation Algorithms
24.2.1. 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 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 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. Diagnosis in Clinical Practice Using AI

26.1. Technologies and Tools for AI-Assisted Diagnostics

26.1.1. Developing Software for AI-Assisted Diagnosis in Different Medical Specialties Using ChatGPT
26.1.2. Using Advanced Algorithms for Rapid and Accurate Analysis of Clinical Symptoms and Signs
26.1.3. Integration of AI into Diagnostic Devices to Improve Efficiency
26.1.4. AI Tools to Assist in the Interpretation of Laboratory Test Results Using IBM Watson Health

26.2. Integration of Multimodal Clinical Data for Diagnosis

26.2.1. AI Systems to Combine Imaging, Laboratory, and Clinical Record Data
26.2.2. Tools for Correlating Multimodal Data into More Accurate Diagnoses Using Enlitic Curie
26.2.3. Using AI to Analyze Complex Patterns from Different Types of Clinical Data
26.2.4. Integration of Genomic and Molecular Data in AI-Assisted Diagnosis

26.3. Creation and Analysis of Healthcare Datasets with AI Using Google Cloud Healthcare API

26.3.1. Developing Clinical Databases for AI Model Training
26.3.2. Using AI for the Analysis and Extraction of Insights from Large Health Datasets
26.3.3. AI Tools for Clinical Data Cleaning and Preparation
26.3.4. AI Systems for Identifying Trends and Patterns in Health Data

26.4. Visualization and Management of Health Data with AI

26.4.1. AI Tools for Interactive and Understandable Visualization of Health Data
26.4.2. AI Systems for Efficient Management of Large Volumes of Clinical Data
26.4.3. Using AI-Based Dashboards for the Monitoring of Health Indicators
26.4.4. AI Technologies for Health Data Management and Security

26.5. Pattern Recognition and Machine Learning in Clinical Diagnostics Using PathAI

26.5.1. Applying Machine Learning Techniques for Pattern Recognition in Clinical Data
26.5.2. Using AI in the Early Identification of Diseases through Pattern Analysis with PathAI
26.5.3. Developing Predictive Models for More Accurate Diagnoses
26.5.4. Implementing Machine Learning Algorithms in the Interpretation of Health Data

26.6. Interpretation of Medical Images Using AI in Research

26.6.1. AI Systems for Detection and Classification of Medical Image Anomalies
26.6.2. Using Deep Learning in the Interpretation of X-Rays, MRI and CT Scans
26.6.3. AI Tools to Improve Accuracy and Speed in Diagnostic Imaging
26.6.4. Implementing AI for Image-Based Clinical Decision Support

26.7. Natural Language Processing on Medical Records for Clinical Diagnosis using ChatGPT and Amazon Comprehend Medical

26.7.1. Use of NLP for the Extraction of Relevant Information from Medical Records
26.7.2. AI Systems for Analyzing Physician Notes and Patient Reports
26.7.3. AI Tools for Summarizing and Classifying Medical Record Information
26.7.4. Applying NLP in the Identification of Symptoms and Diagnosis from Clinical Texts

26.8. Validation and Evaluation of AI-Assisted Diagnostic Models Using ConcertAI

26.8.1. Methods for Validation and Testing of AI Models in Real Clinical Settings
26.8.2. Assessing Performance and Accuracy of AI-Assisted Diagnostic Tools
26.8.3. Using AI to Ensure Reliability and Ethics in Clinical Diagnosis
26.8.4. Implementing Continuous Assessment Protocols for AI Systems in Healthcare

26.9. AI in the Diagnosis of Rare Diseases Using Face2Gene

26.9.1. Developing AI Systems Specialized in Rare Disease Identification
26.9.2. Using AI to Analyze Atypical Patterns and Complex Symptomatology
26.9.3. AI Tools for Early and Accurate Diagnosis of Rare Diseases
26.9.4. Implementing Global Databases with AI to Improve Diagnosis of Rare Diseases

26.10. Success Stories and Challenges in AI Diagnostics Implementation

26.10.1. Analysis of Case Studies where AI has Significantly Improved Clinical Diagnosis
26.10.2. Assessment of Challenges in AI adoption in Clinical Settings
26.10.3. Discussion on Ethical and Practical Barriers in the Implementation of AI for Diagnosis
26.10.4. Examination of Strategies for Overcoming Obstacles to the Integration of AI in Medical Diagnostics

Module 27. Treatment and Management of Patients with AI

27.1. AI-Assisted Treatment Systems
27.1.1. Developing AI Systems to Assist in Therapeutic Decision Making
27.1.2. Using AI for the Personalization of Treatments Based on Individual Profiles
27.1.3. Implementing AI Tools in the Administration of Medication Doses and Schedules
27.1.4. Integrating AI in Real-Time Monitoring and Adjustment of Treatment

27.2. Definition of Indicators for Monitoring the Patient's Health Status
27.2.1. Establishing Key Parameters Using AI to Monitor Patient Health Status
27.2.2. Using AI to Identify Predictive Indicators of Health and Disease
27.2.3. Developing Early Warning Systems Based on Health Indicators
27.2.4. Implementing AI for Continuous Assessment of Patient Health Status

27.3. Tools for Monitoring and Control of Health Indicators
27.3.1. Developing Mobile and Wearable Applications with AI for Health Monitoring and Control
27.3.2. Implementing AI Systems for the Real-Time Analysis of Health Data
27.3.3. Using AI-Based Dashboards for Visualization and Monitoring of Health Indicators
27.3.4. Integrating IoT Devices in the Continuous Monitoring of Health Indicators with AI

27.4. AI in the Planning and Execution of Medical Procedures with Intuitive Surgical's da Vinci Surgical System
27.4.1. Using AI Systems to Optimize the Planning of Surgeries and Medical Procedures
27.4.2. Implementing AI in the Simulation and Practice of Surgical Procedures
27.4.3. Using AI to Improve Accuracy and Efficacy in the Performance of Medical Procedures
27.4.4. Applying AI in the Coordination and Management of Surgical Resources

27.5. Machine Learning Algorithms for the Establishment of Therapeutic Treatments
27.5.1. Using Machine Learning to Develop Personalized Treatment Protocols
27.5.2. Implementing Predictive Algorithms for the Selection of Effective Therapies
27.5.3. Developing AI Systems for Real-Time Treatment Adaptation
27.5.4. Applying AI in the Analysis of the Effectiveness of Different Therapeutic Options

27.6. Adaptability and Continuous Updating of Therapeutic Protocols Using AI with IBM Watson for Oncology
27.6.1. Implementing AI Systems for Dynamic Review and Treatment Updating
27.6.2. Using AI to Adapt Therapeutic Protocols to New Discoveries and Data
27.6.3. Developing AI Tools for Continuous Personalization of Treatments
27.6.4. Integrating AI in Adaptive Response to Evolving Patient Conditions

27.7. Optimizing Healthcare Services with AI Technology with Optum
27.7.1. Using AI to Improve the Efficiency and Quality of Healthcare Services
27.7.2. Implementing AI Systems for Healthcare Resource Management
27.7.3. Developing AI Tools for Hospital Workflow Optimization
27.7.4. Applying AI to Reduce Waiting Times and Improve Patient Care

27.8. Applying AI in Health Emergency Responses
27.8.1. Implementing AI Systems for Rapid and Efficient Health Crisis Management with BlueDot
27.8.2. Using AI to Optimize Resource Allocation in Emergency Response
27.8.3. Developing AI Tools for Disease Outbreak Prediction and Response
27.8.4. Integrating AI into Warning and Communication Systems during Health Emergencies

27.9. Interdisciplinary Collaboration in AI-Assisted Treatments
27.9.1. Encouraging Collaboration between Different Medical Specialties Using AI Systems
27.9.2. Using AI to Integrate Knowledge and Techniques from Different Disciplines into Treatment
27.9.3. Developing AI Platforms to Facilitate Interdisciplinary Communication and Coordination
27.9.4. Implementing AI in the Creation of Multidisciplinary Treatment Teams

27.10. Successful Experiences of AI in the Treatment of Diseases
27.10.1. Analysis of Successful Cases in the Use of AI for Effective Treatment of Diseases
27.10.2. Evaluation of the Impact of AI in Improving Treatment Outcomes
27.10.3. Documentation of Innovative Experiences in the Use of AI in Different Medical Areas
27.10.4. Discussion of Advances and Challenges in the Implementation of AI in Medical Treatments

Module 28. Personalization of Healthcare through AI

28.1. AI Applications in Genomics for Personalized Medicine with DeepGenomics

28.1.1. Development of AI Algorithms for the Analysis of Genetic Sequences and their Relationship with Diseases
28.1.2. Using AI to Identify Genetic Markers for Personalized Treatments
28.1.3. Implementing AI for Fast and Accurate Interpretation of Genomic Data
28.1.4. AI Tools in Genotype Correlation with Drug Responses

28.2. AI in Pharmacogenomics and Drug Design with AtomWise

28.2.1. Developing AI Models to Predict Drug Efficacy and Safety
28.2.2. Using AI in Therapeutic Target Identification and Drug Design
28.2.3. Applying AI in the Analysis of Gene-Drug Interactions for Treatment Customization
28.2.4. Implementing AI Algorithms to Accelerate Discovery of New Drugs

28.3. Personalized Monitoring with Smart Devices and AI

28.3.1. Development of Wearables with AI for Continuous Monitoring of Health Indicators
28.3.2. Using AI to Interpret Data Collected by Smart Devices with FitBit
28.3.3. Implementing AI-Based Early Warning Systems for Health Conditions
28.3.4. AI Tools for Customizing Lifestyle and Health Recommendations

28.4. Clinical Decision Support Systems with AI

28.4.1. Implementing AI to Assist Physicians in Clinical Decision Making with Oracle Cerner
28.4.2. Developing AI Systems that Provide Recommendations Based on Clinical Data
28.4.3. Using AI in the Assessment of Risks and Benefits of Different Therapeutic Options
28.4.4. AI Tools for Real-Time Health Data Integration and Analysis

28.5. Trends in Health Personalization with AI

28.5.1. Analyzing the Latest AI Trends for Customizing Healthcare
28.5.2. Using AI in the Development of Preventive and Predictive Approaches in Health
28.5.3. Implementing AI in Adapting Health Plans to Individual Needs
28.5.4. Exploring New AI Technologies in the Field of Personalized Health

28.6. Advances in AI-Assisted Surgical Robotics with Intuitive Surgical's da Vinci Surgical System

28.6.1. Developing AI-Enabled Surgical Robots for Precise and Minimally Invasive Procedures
28.6.2. Using AI to Create Predictive Disease Models Based on Individual Data with OncoraMedical
28.6.3. Implementing AI Systems for Surgical Planning and Simulation of Operations
28.6.4. Advances in the Integration of Tactile and Visual Feedback in Surgical Robotics with AI

28.7. Development of Predictive Models for Personalized Clinical Practice

28.7.1. Using AI to Create Predictive Disease Models Based on Individual Data
28.7.2. Implementing AI in Predicting Treatment Responses
28.7.3. Developing AI Tools for Anticipating Health Risks
28.7.4. Applying Predictive Models in Planning Preventive Interventions

28.8. AI in Personalized Pain Management and Treatment with Kaia Health

28.8.1. Developing AI Systems for Personalized Pain Assessment and Management
28.8.2. Using AI in Identifying Pain Patterns and Responses to Treatments
28.8.3. Implementing AI Tools in Customizing Pain Therapies
28.8.4. Applying AI in Monitoring and Adjusting Pain Treatment Plans

28.9. Patient Autonomy and Active Participation in Personalization

28.9.1. Promoting Patient Autonomy through AI Tools for Managing Patient Health with Ada Health
28.9.2. Developing AI Systems that Empower Patients in Decision Making
28.9.3. Using AI to Provide Personalized Information and Education to Patients
28.9.4. AI Tools that Facilitate Active Patient Participation in Their Treatment

28.10. Integration of AI in Electronic Medical Records with Oracle Cerner

28.10.1. Implementing AI for Efficient Analysis and Management of Electronic Medical Records
28.10.2. Developing AI Tools for Extracting Clinical Insights from Electronic Records
28.10.3. Using AI to Improve Accuracy and Accessibility of Data in Medical Records
28.10.4. Applying AI for the Correlation of Clinical History Data with Treatment Plans

Module 29. Analysis of Big Data in the Health Sector with AI

29.1. Fundamentals of Big Data in Healthcare
29.1.1. The Explosion of Data in the Field of Health
29.1.2. Concept of Big Data and Main Tools
29.1.3. Applications of Big Data in Health

29.2. Text Processing and Analysis in Health Data with KNIME and Python
29.2.1. Concepts of Natural Language Processing
29.2.2. Embedding Techniques
29.2.3. Application of Natural Language Processing in Health

29.3. Advanced Methods for Data Retrieval in Health with KNIME and Python
29.3.1. Exploring Innovative Techniques for Efficient Health Data Retrieval
29.3.2. Developing Advanced Strategies for Extracting and Organizing Information in Health Settings
29.3.3. Implementing Adaptive and Customized Data Retrieval Methods for Diverse Clinical Contexts

29.4. Quality Assessment in Health Data Analysis with KNIME and Python
29.4.1. Developing Indicators for the Rigorous Assessment of Data Quality in Health Care Settings
29.4.2. Implementing Tools and Protocols to Ensure the Quality of Data Used in Clinical Analyses
29.4.3. Continuous Assessment of Accuracy and Reliability of Results in Health Data Analysis Projects

29.5. Data Mining and Machine Learning in Health with KNIME and Python
29.5.1. Main Methodologies for Data Mining
29.5.2. Health Data Integration
29.5.3. Detection of Patterns and Anomalies in Health Data

29.6. Innovative Areas of Big Data and AI in Healthcare
29.6.1. Exploring New Frontiers in the Application of Big Data and AI to Transform the Healthcare Sector
29.6.2. Identifying Innovative Opportunities for the Integration of Big Data and AI Technologies in Medical Practices
29.6.3. Developing Cutting-Edge Approaches to Maximize the Potential of Big Data and AI in Healthcare

29.7. Medical Data Collection and Pre-Processing with KNIME and Python
29.7.1. Developing Efficient Methodologies for Medical Data Collection in Clinical and Research Settings
29.7.2. Implementing Advanced Pre-Processing Techniques to Optimize the Quality and Utility of Medical Data
29.7.3. Designing Collection and Pre-Processing Strategies to Ensure Confidentiality and Privacy of Medical Information

29.8. Data Visualization and Communication in Healthcare with PowerBI and Python-like Tools
29.8.1. Designing Innovative Visualization Tools in Health
29.8.2. Creative Communication Strategies in Health
29.8.3. Integrating Interactive Technologies in Health

29.9. Data Security and Governance in the Health Sector
29.9.1. Developing Comprehensive Data Security Strategies to Protect Confidentiality and Privacy in the Health Care Sector
29.9.2. Implementing Effective Governance Frameworks to Ensure Ethical and Responsible Data Management in Medical Settings
29.9.3. Designing Policies and Procedures to Ensure the Integrity and Availability of Medical Data, Addressing Challenges Specific to the Health Sector

29.10. Practical Applications of Big Data in Healthcare
29.10.1. Developing Specialized Solutions to Manage and Analyze Large Datasets in Healthcare Settings
29.10.2. Using Practical Big Data-Based Tools to Support Clinical Decision-Making
29.10.3. Application of Innovative Big Data Approaches to Address Specific Challenges within the Healthcare Sector

Module 30. Ethics and Regulation in Medical AI

30.1. Ethical Principles in the Use of AI in Medicine

30.1.1. Analysis and Adoption of Ethical Principles in the Development and Use of Medical AI Systems
30.1.2. Integrating Ethical Values into AI-Assisted Decision-Making in Medical Settings
30.1.3. Establishing Ethical Guidelines to Ensure the Responsible Use of Artificial Intelligence in Medicine

30.2. Data Privacy and Consent in Medical Contexts

30.2.1. Developing Privacy Policies to Protect Sensitive Data in Medical AI Applications
30.2.2. Guarantee of Informed Consent in the Collection and Use of Personal Data in the Medical Field
30.2.3. Implementing Security Measures to Safeguard Patient Privacy in Medical AI Environments

30.3. Ethics in Research and Development of Medical AI Systems

30.3.1. Ethical Evaluation of Research Protocols in the Development of AI Systems for Health
30.3.2. Ensuring Transparency and Ethical Rigor in the Development and Validation of Medical AI Systems
30.3.3. Ethical Considerations in the Publication and Sharing of Medical AI Results

30.4. Social Impact and Accountability in Health AI

30.4.1. Analysis of the Social Impact of AI on Health Service Delivery
30.4.2. Developing Strategies to Mitigate Risks and Ethical Responsibility in Medical AI Applications
30.4.3. Continuous Social Impact Assessment and Adaptation of AI Systems to Positively Contribute to Public Health

30.5. Sustainable Development of AI in the Health Sector

30.5.1. Integration of Sustainable Practices in the Development and Maintenance of AI Systems in Health
30.5.2. Environmental and Economic Impact Assessment of AI Technologies in Health
30.5.3. Development of Sustainable Business Models to Ensure Continuity and Improvement of AI Solutions in the Health Sector

30.6. Data Governance and International Regulatory Frameworks in Medical AI

30.6.1. Development of Governance Frameworks for Ethical and Efficient Data Management in Medical AI Applications
30.6.2. Adaptation to International Regulations to Ensure Ethical and Legal Compliance
30.6.3. Active Participation in International Initiatives to Establish Ethical Standards in the Development of Medical AI Systems

30.7. Economic Aspects of AI in the Health Sector

30.7.1. Analysis of Economic Implications and Cost-Benefits in the Implementation of AI Systems in Health
30.7.2. Development of Business Models and Financing to Facilitate the Adoption of AI Technologies in the Healthcare Sector
30.7.3. Assessment of Economic Efficiency and Equity in Access to AI-Driven Health Services

30.8. Human-Centered Design of Medical AI Systems

30.8.1. Integrating Human-Centered Design Principles to Improve Usability and Acceptance of Medical AI Systems
30.8.2. Participation of Health Professionals and Patients in the Design Process to Ensure the Relevance and Effectiveness of the Solutions
30.8.3. Continuous User Experience Assessment and Feedback to Optimize Interaction with AI Systems in Medical Environments

30.9. Fairness and Transparency in Medical Machine Learning

30.9.1. Developing Medical Machine Learning Models that Promote Equity and Transparency
30.9.2. Implementing Practices to Mitigate Biases and Ensure Equity in the Application of AI Algorithms in the Field of Health
30.9.3. Continuous Assessment of Equity and Transparency in the Development and Deployment of Machine Learning Solutions in Medicine

30.10. Safety and Policy in the Implementation of AI in Medicine

30.10.1. Developing Security Policies to Protect Data Integrity and Confidentiality in Medical AI Applications
30.10.2. Implementing Safety Measures in the Deployment of AI Systems to Prevent Risks and Ensure Patient Safety
30.10.3. Continuous Evaluation of Safety Policies to Adapt to Technological Advances and New Challenges in the Implementation of AI in Medicine

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.

01 learning from evidence

02 relearning from evidence

03 testing

04 learning from an expert

05 neurocognitive context dependent learning

06 Von-Restorff effect

07 case based learning through storytelling

08 competencies testing (retesting)

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.

30%

10%

8%

3%

30%

15%

4%

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.

Our Students' Profiles

The student profile is both varied and multidisciplinary. Most of the students have a solid academic specialization and professional experience in areas related to Health Sciences, Engineering, Business Administration, Information and Communication Technologies. The priority of these graduates is to enhance their professional careers through an approach based on innovation and social impact. Therefore, they wish to nurture their procedures with the most advanced techniques of Artificial Intelligence to contribute to a greater extent to improve the quality of life of people.

This program is aimed at people interested in optimizing their professional practice thanks to a first-class Advanced Master's Degree"

Average Age

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

Years of Experience

Up to 5 years **18%**

10 to 15 years **35%**

5-10 years **30%**

More than 15 years **17%**

Training

Health Sciences **40%**

Information and Communication Technologies **10%**

Engineering **30%**

Business Administration **15%**

Other **5%**

Academic Profile

Health Professional **32%**

Specialist in Information Technologies **24%**

Clinical Researcher **14%**

Experts in Data Analysis **20%**

Other **10%**
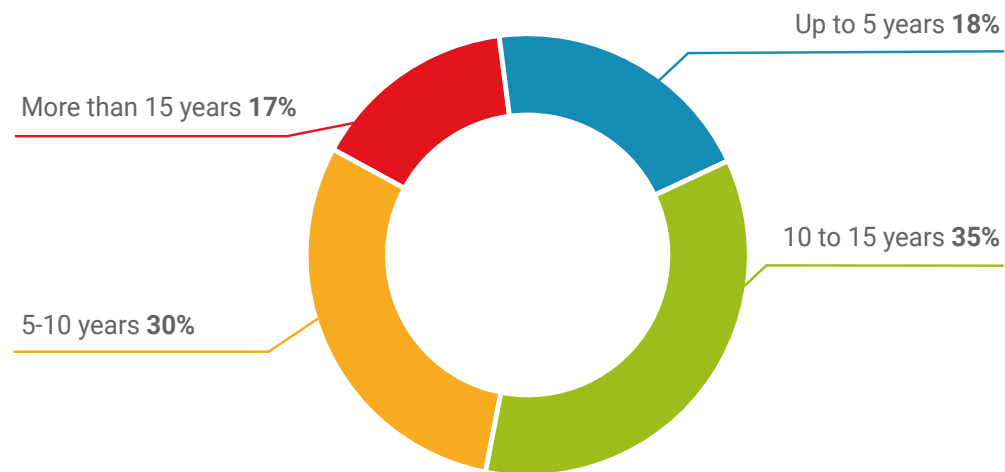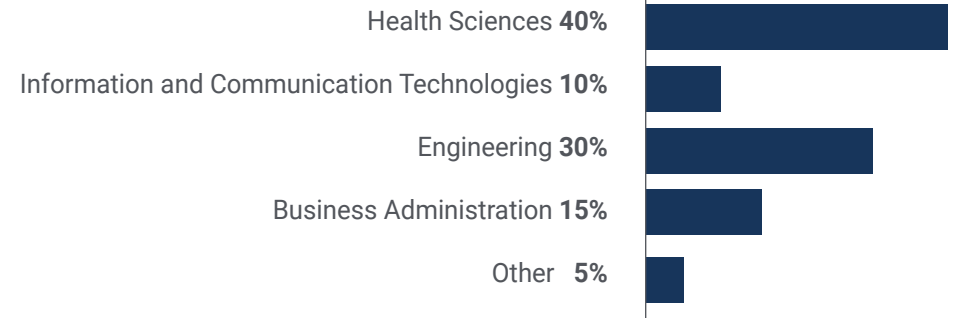
Geographical Distribution

- USA **12%**
- Spain **38%**
- Mexico **18%**
- Colombia **7%**
- Argentina **8%**
- Chile **6%**
- Peru **4%**
- Other **7%**
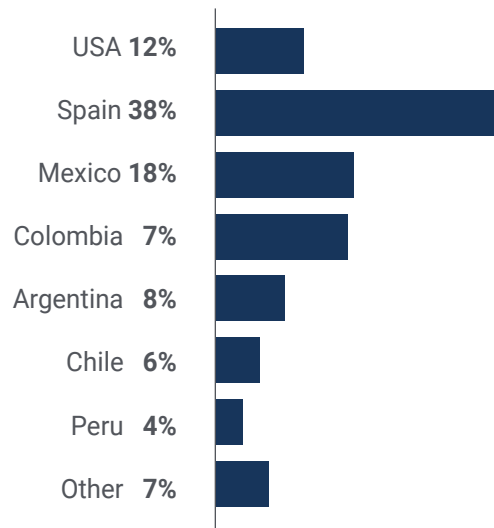
Pedro Hernández

Clinical Researcher at a prestigious hospital

"I would like to express my gratitude to TECH for giving me the opportunity to participate in this cutting edge program. The quality of education, the resources available and the stimulating learning environment have been instrumental in my professional development"

09

Course Management

In its philosophy of providing quality education, for this university degree TECH has selected a teaching group composed of specialists in Artificial Intelligence applied to Clinical Practice. These professionals will provide students with a comprehensive and multidisciplinary approach, to raise their professional practice to a higher level. These teachers will pour into the didactic materials both their knowledge and years of work experience in this field, so that the resources will have full validity and applicability. In addition, the experts will take into account the latest technologies to provide a perspective on emerging opportunities in this area.

A top-notch teaching team that will bring you up to date on advances in Artificial Intelligence Assisted Surgical Robotics"

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* companies such as **NBCUniversal** and **Comcast**. Her track record has allowed her to excel in competitive, high-growth environments.

As **Vice President of Talent Acquisition** at **Mastercard** she is responsible for overseeing talent onboarding strategy and execution, collaborating with business leaders and **HR Managers** to meet operational and strategic hiring objectives. In particular, she aims to **build diverse**, **inclusive** and **high-perfoming 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 management positions in recruitment for companies in various areas.

On the other hand, it has been recognized for its ability to lead organizational transformations, **integrate technologies** into **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 **clouds**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 landscap**e. 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 **campaings.** 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 Luminate'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 t**elevision 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, Ph.D., 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 Prometeus 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. Martín-Palomino Sahagún, Fernando

- Chief Technology Officer and R+D+i Director at AURA Diagnostics (medTech)
- Business Development at SARLIN
- Chief Operating Officer at Alliance Diagnostics
- Chief Innovation Officer at Alliance Medical
- Chief Information Officer at Alliance Medical
- Field Engineer & Project Management in Digital Radiology at Kodak
- MBA from Polytechnic University of Madrid
- Executive Master's Degree in Marketing and Sales at ESADE
- Telecommunications Engineer from the University Alfonso X El Sabio

Professors

Dr. Carrasco González, Ramón Alberto

- Specialist in Computer Science and Artificial Intelligence
- Researcher
- Head of Business Intelligence (Marketing) at Caja General de Ahorros de Granada and Banco Mare Nostrum.
- Head of Information Systems (Data Warehousing and Business Intelligence) at Caja General de Ahorros de Granada and Banco Mare Nostrum.
- Doctor in Artificial Intelligence by the University of Granada
- Higher Engineering Degree in Computer Science from the University of Granada

Mr. Popescu Radu, Daniel Vasile

- Pharmacology, Nutrition and Diet Specialist
- Freelance Producer of Teaching and Scientific Content
- Nutritionist and Community Dietitian
- Community Pharmacist
- Researcher
- Master's Degree in Nutrition and Health at the Open University of Catalonia
- Master's Degree in Psychopharmacology from the University of Valencia
- Pharmacist from the Complutense University of Madrid
- Nutritionist-Dietitian by the European University Miguel de Cervantes

Impact on Your Career

This Advanced Master's Degree will provide students with a deep understanding of Artificial Intelligence and its specific application in the field of Clinical Practice. In this way, professionals will contribute to the advancement of medicine and optimize patient care. In addition, they will be able to participate in the development of new technologies and the implementation of innovative solutions that have a positive impact on both the quality and efficiency of healthcare. This will open up a variety of career opportunities for students, ranging from companies specializing in medical technology to medical research.

You will learn through real cases and by solving complex situations in simulated learning environments. Aspire to the top with TECH!"

tech

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

The MBA in Artificial Intelligence in Clinical Practice from TECH Global University is an intensive program that prepares students to face business challenges and 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.

You will specialize in Big Data Analytics in healthcare and take a leap in quality in your professional career.

You will use the most innovative tools of Artificial Intelligence in the context of Clinical Practice and contribute to optimize the well-being of your patients.

Moment of change

During the program	During the first year	After 2 years
11%	**63%**	**26%**

Type of change

Internal Promotion **48%**

Change of Company **35%**

Entrepreneurship **17%**
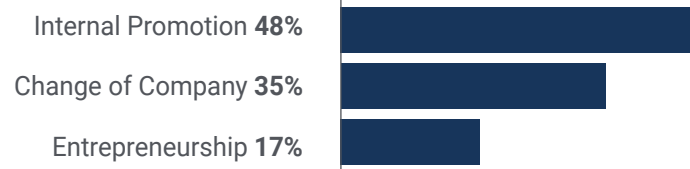
Salary increase

This program represents a salary increase of more than **25%** for our students

Salary before	A salary increase of	Salary after
57.900 €	**25%**	**72.500 €**
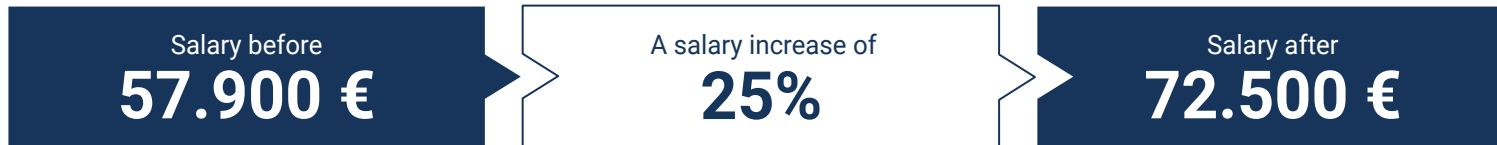
11
Benefits for Your Company

While this university program is designed with the specialization needs of professionals in mind, it also takes into account what graduates will bring to the organizations in which they work. These experts will enable their companies to leverage their expertise to develop innovative solutions that improve medical care, optimize clinical processes and generate new business opportunities in the healthcare sector. They will also be trained to leverage Artificial Intelligence to improve diagnostics, personalized treatments, patient data management, etc. These specialists will be able to lead research teams to explore new ideas and bring them to market.

"
This program gives you the opportunity to address real work scenarios in Artificial Intelligence in Clinical Practice, providing an immersive experience alongside the best specialists"

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.

03

Building agents of change

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

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.

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.

Certificate

The MBA in Artificial Intelligence in Clinical Practice 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 a **Advanced Master's Degree diploma in MBA in Artificial Intelligence in Clinical Practice** 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 in MBA in Artificial Intelligence in Clinical Practice**

Modality: **online**

Duration: **2 years**

Accreditation: **120 ECTS**

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Mr./Ms. _____, with identification document _____ has successfully passed and obtained the title of:

Advanced Master's Degree in MBA in Artificial Intelligence in Clinical Practice

This is a private qualification of 3,600 hours of duration equivalent to 120 ECTS, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH Global University is a university officially recognized by the Government of Andorra on the 31st of January of 2024, which belongs to the European Higher Education Area (EHEA).

In Andorra la Vella, on the 28th of February of 2024

Dr. Pedro Navarro Illana
Dean

Unique TECH Code: AFWORD23S   techtitute.com/certificates

Advanced Master's Degree in MBA in Artificial Intelligence in Clinical Practice

General Structure of the Syllabus

Year	Subject	ECTS	Type	Year	Subject	ECTS	Type
1º	Leadership, Ethics and Social Responsibility in Companies	4	CO	1º	Intelligent Systems	4	CO
1º	Strategic Management and Executive Management	4	CO	1º	Machine Learning and Data Mining	4	CO
1º	People and Talent Management	4	CO	1º	Neural Networks, the Basis of Deep Learning	4	CO
1º	Economic and Financial Management	4	CO	1º	Deep Neural Networks Training	4	CO
1º	Operations and Logistics Management	4	CO	1º	Model Customization and Training with TensorFlow	4	CO
1º	Information Systems Management	4	CO	1º	Deep Computer Vision with Convolutional Neural Networks	4	CO
1º	Commercial Management, Strategic Marketing and Corporate Communications	4	CO	1º	Natural Language Processing (NLP) with Recurrent Neural Networks (RNN) and Attention	4	CO
1º	Market Research, Advertising and Commercial Management	4	CO	1º	Autoencoders, GANs , and Diffusion Models	4	CO
1º	Innovation and Project Management	4	CO	1º	Bio-Inspired Computing	4	CO
1º	Executive Management	4	CO	1º	Artificial Intelligence: Strategies and Applications	4	CO
1º	Fundamentals of Artificial Intelligence	4	CO	1º	Diagnosis in Clinical Practice using AI	4	CO
1º	Data Types and Life Cycle	4	CO	1º	Treatment and Management of Patients with AI	4	CO
1º	Data in Artificial Intelligence	4	CO	1º	Personalization of Healthcare through AI	4	CO
1º	Data Mining. Selection, Pre-Processing and Transformation	4	CO	1º	Analysis of Big Data in the Health Sector with AI	4	CO
1º	Algorithm and Complexity in Artificial Intelligence	4	CO	1º	Ethics and Regulation in Medical AI	4	CO

Dr. Pedro Navarro Illana
Dean

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*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.

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Advanced Master's Degree
MBA in Artificial Intelligence in Clinical Practice

- » 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 Clinical Practice

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