# Advanced Master's Degree

## Information Systems Management (CIO, Chief Information Officer)

tech global university

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# Advanced Master's Degree
## Information Systems Management (CIO, Chief Information Officer)

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

Website: www.techtitute.com/us/information-technology/advanced-master-degree/advanced-master-degree-information-systems-management-cio-chief-information-officer

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01

# Introduction

Companies are becoming increasingly computerized, and use a large number of digitized processes in one way, shape or form, which favors security in the storage and custody of data. Teamwork helps to streamline processes and enables global and innovative strategies to be applied, among other things. For this reason, the figure of the Chief Information Officer is becoming an increasingly important role in companies, as they are in charge of managing and designing plans that will allow companies to rely on new technologies to promote their growth. In this sense, TECH has created this program that will not only provide professionals with the most rigorous information to successfully manage in this field, but will also complement it with an exhaustive study on the administration of companies. A great opportunity to position yourself as an outstanding CIO with a 100% online program, no face-to-face classes and no fixed schedules.

*Get a head start by incorporating key technology and information leadership techniques, taking a decisive step towards the position of CIO, Chief Information Officer"*

New technologies have favored the advancement of practically all professional areas by incorporating new models for carrying out procedures, which not only speeds them up, but also makes them more secure. But these technologies themselves are also constantly evolving, as research in this field has led to the emergence of new applications and more advanced tools. Information systems managers are the professionals who must be adequately qualified to decide which of these technologies should be applied in the different areas of the companies, as well as to monitor and control them.

For this reason, it is the professional profile that is becoming increasingly important at the corporate level. The design of programs, applications and operating systems are some of the main tasks of computer scientists in this field. Therefore, this Advanced Master's Degree includes relevant information about them, but also covers concepts such as fields, waves, electromagnetism, circuits, etc., or the analysis and understanding of computer structures and architectures. These are all issues that may seem to be of great use in the field of information technology. However, TECH goes a step further with this program, and complements it with the most up-to-date information on Business Administration. In this way, the CIO will be able to acquire a complete and global vision of what a company is all about, understanding, in a more efficient way, which benefits can be contributed to the business and making decisions that will be key to its growth.

For this purpose, TECH proposes a novel learning method, in which practice is the key to study. Therefore, with a modern methodology, the professional will have the opportunity to combine theoretical study with practical cases, in such a way that learning will be much more effective and efficient. And all this in a 100% online format that will allow students to study from anywhere in the world, without the need to make unnecessary trips to face-to-face classes, and being able to self-manage their study time as they wish. A unique opportunity that will be indispensable for your professional development.

This **Advanced Master's Degree in Information Systems Management (CIO, Chief Information Officer)** contains the most complete and up-to-date educational program on the market. The most important features include:

- The latest technology in e-learning software
- Intensely visual teaching system, supported by graphic and schematic contents that are easy to assimilate and understand
- The development of practical case studies presented by practising experts
- State-of-the-art interactive video systems
- Teaching supported by telepractice
- Continuous updating and recycling systems
- Self-regulated learning: full compatibility with other occupations
- Practical exercises for self-assessment and learning verification
- Support groups and educational synergies: questions to the expert, debate and knowledge forums
- Communication with the teacher and individual reflection work
- Content that is accessible from any fixed or portable device with an Internet connection
- Complementary resource banks that are permanently available

*This Advanced Master's Degree will provide you with the necessary resources to manage new technologies applied to your business"*

*A program with which you will be able to improve your specialist skills in information systems management in a simple way"*

The teaching staff for this program is composed of practisng professionals. This way, TECH can fulfill the objective that it has set for itself of updating students' knowledge. It is a multidisciplinary staff of experienced professionals from a variety of fields, who will develop theoretical knowledge in an efficient manner, but above all, will provide students with all the practical knowledge derived from their own experience.

This command of the subject is complemented by the effectiveness of the methodological design of this program. As such, it was developed by a multidisciplinary team of e-learning experts and integrates the latest advances in educational technology, allowing students to study with a range of convenient and versatile multimedia tools, giving them the operational skills they need for their education.

The design of this program is based on Problem-Based Learning, an approach that views learning as a highly practical process. To achieve this remotely, TECH uses an online methodology. With the help of an innovative, interactive video system and Learning from an Expert, students will be able to acquire the knowledge as if they were facing the scenario they are currently learning abour. A concept that will allow students to integrate and memorize what they have learnt in a more realistic and permanent way.

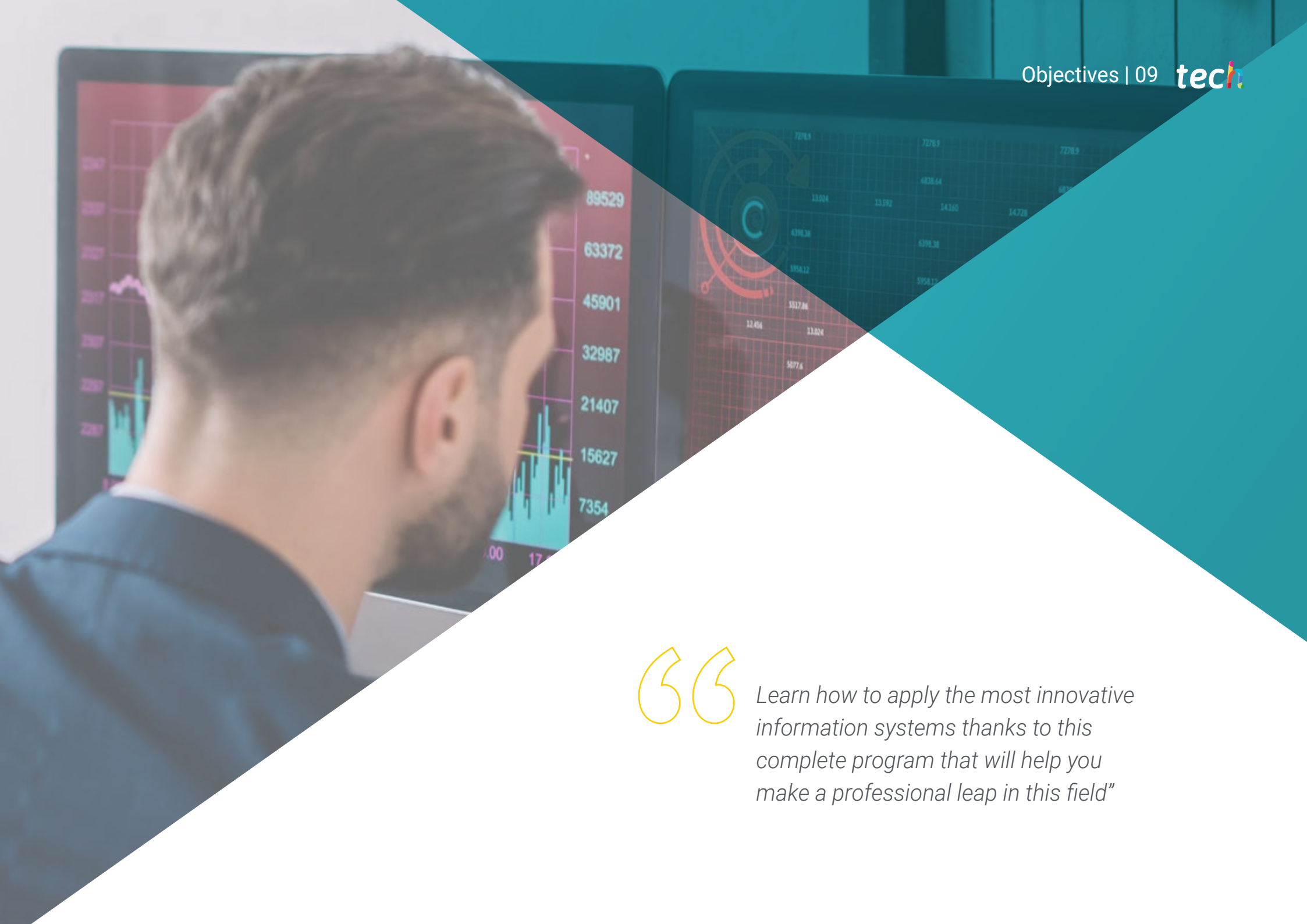
*Thanks to this Advanced Master's Degree, you will be able to carry out an exhaustive study of the main areas of knowledge involved in the management of information systems.*

*TECH offers students the possibility to study with the latest educational technology. A quality boost that will make a difference in your learning.*

02

# Objectives

This Advanced Master's Degree has been designed by TECH with the main objective of offering students information on the latest concepts and strategies in the field of information systems management. In this way, computer scientists will obtain the necessary specialization to provide their company with an innovative strategic vision in this field. This will be fundamental for the proper development of the company, through the successful application of new technologies.

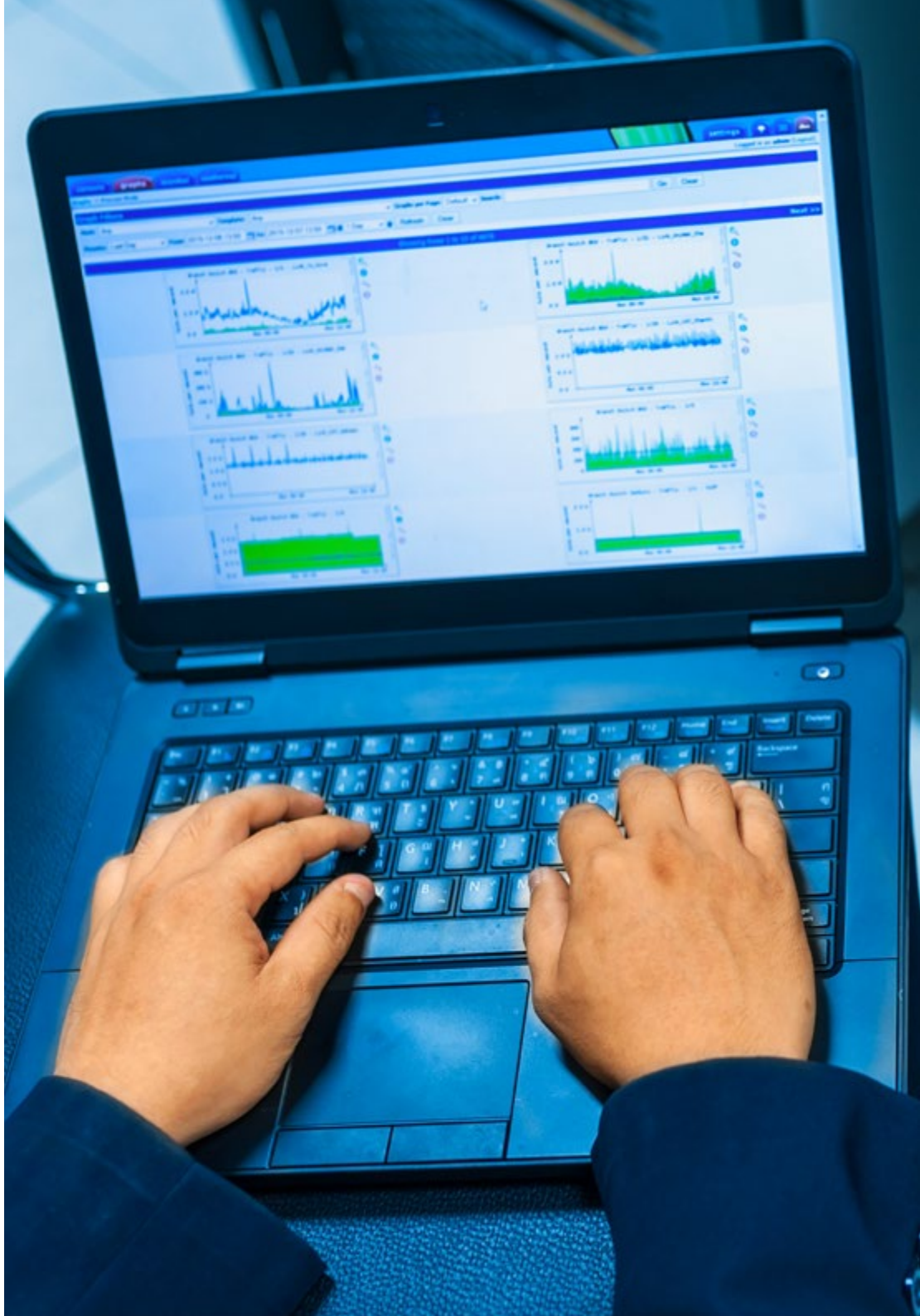



*Learn how to apply the most innovative information systems thanks to this complete program that will help you make a professional leap in this field"*

## General objectives

- Define the latest trends in business management, taking into account the globalized environment that governs senior management criteria
- Develop the key leadership skills that should define working professionals
- Scientifically and technologically train professionals and prepare them for professional practice in computer systems, all this with a transversal and versatile program, adapted to new technologies and innovations in the field

*Acquire the most specialized knowledge in emerging information technologies and achieve professional success in this field"*



## Specific objectives

### Module 1. Leadership, Ethics, and CSR

- Develop the key leadership skills that should define working professionals
- Develop strategies to carry out decision-making in a complex and unstable environment
- 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

### Module 2. Strategic Direction and Executive Management

- Define the latest trends in business management, taking into account the globalized environment that governs senior management criteria
- Create corporate strategies that set the script for the company to follow in order to be more competitive and achieve its own objectives
- Develop all the phases of a business idea: design, feasibility plan, execution, monitoring

### Module 3. People and Talent Management

- Understand the best way to manage the company's human resources, getting greater performance from employees that, in turn, increases the company's profits
- Define the key roles for information systems management
- Identify people talent for talent management

### Module 4. Economic and Financial Management

- Understand the economic environment in which the company operates and develop appropriate strategies to anticipate changes
- Manage the company's economic and financial plan

### Module 5. Operations and Logistics Management

- Follow the sustainability criteria set by international standards when developing a business plan
- Develop the skills required to manage business activities strategically
- Understand the logistic operations that are necessary in the business environment, so as to manage them appropriately

### Module 6. Information Systems Management

- Be able to apply information and communication technologies to the different areas within a company
- Develop techniques to manage different information systems
- Utilize the different tools offered by information systems

### Module 7. Commercial Management, Marketing, and Corporate Communication

- Carry out the marketing strategy that allows us to make our product known to our potential clients and to generate a suitable image of our company
- Identify the main promotional tools and apply them in business marketing
- Develop advertising and commercial marketing techniques

### Module 8. Innovation and Project Management

- Design innovative strategies and policies to improve management and business efficiency
- Create innovative strategies in line with projects
- Identify how new technologies are utilized in project management
- Identify current demands and use them innovatively within projects

### Module 9. Physical Fundamentals of Computing

- Acquire basic fundamental knowledge of engineering physics, such as fundamental forces and conservation laws
- Learn the concepts related to energy, its types, measurements, conservation and units
- Know how electric, magnetic and electromagnetic fields work
- Understand the basic fundamentals of electrical circuits in direct current and alternating current
- Assimilate the structure of atoms and subatomic particles
- Understand the basics of quantum physics and relativity

### Module 10. Computer Technology

- Know the history of computers, as well as the main types of existing organizations and architectures
- Acquire the necessary knowledge to understand computer arithmetic and the basics of logic design
- Understand the operation and composition of a computer, from the different devices that compose it to the ways of interacting between and with them
- Learn the different types of memory (internal memory, cache memory and external memory), as well as the operation of input/output devices
- Understand the structure and operation of processors, as well as the operation of control units and micro-operations
- Learn the basics of machine instructions, types, assembly language and addressing

### Module 11. The Structure of Computers

- Learn the fundamentals of computer design and evolution, including parallel architectures and levels of parallelism
- Understand the different ways of assessing the performance of computer work, as well as the use of performance testing programs
- Understand the operation of the memory hierarchy, the different types of storage and input/output issues
- Learn the characteristics of different types of processors, such as segmented, superscalar, VLIW and vector processors
- Understand the operation of parallel computers, their motivation, performance and architecture
- Know the characteristics of computer interconnection networks and of multiprocessors

### Module 12. Operating Systems

- Learn the basic concepts of operating systems as well as their structure, including services, system calls and user interface
- Understand the operation of process scheduling in an operating system and in general the concepts related to processes and threads
- Assimilate the principles of concurrency, mutual exclusion, synchronization and interlocking
- Understand how memory management works in operating systems and the basics of virtual memory and its policies
- Learn about the interface and implementation of operating systems, understanding the concepts of files, file systems, directory structure and their implementation, as well as the methods of allocation and management of free space
- Understand the existing protection mechanisms in operating systems

### Module 13. Advanced Operating System

- Deepen the knowledge of operating systems, their functions, process management, memory, directories and files, as well as the keys to their security and design objectives
- Know the step-by-step of the different stages of the history of operating systems
- Understand the structure of the main operating systems in existence
- Learn about the structure of the two main operating systems, as well as the use of their terminals
- Learn the basics of shell scripting and the main tools for programming in C language
- Understand the operation of system calls, either on files or processes

### Module 14. Free Software and Open Knowledge

- Learn the concepts of Free Software and Open Knowledge, as well as the different types of associated licenses
- Know the main free tools available in different areas such as operating systems, business management, content management systems and multimedia content creation, among others
- Understand the importance and benefits of free software in the business world, both for its features and costs
- Gain knowledge of the GNU/Linux operating system, as well as the different existing distributions, and how to make customized adaptations of them
- Learn about the operation and development of WordPress, given that this Content Management System (CMS) accounts for more than 35% of active websites in the world, and more than 60% in the particular case of CMSs
- Understand how the Android mobile operating system works, as well as the basics of mobile application development, both natively and with cross-platform frameworks

### Module 15. Computer Networks

- Acquire the essential knowledge of computer networks on the Internet
- Understand the functioning of the different layers that define a networked system, such as application, transport, network and link layers
- Understand the composition of LANs, their topology, network and interconnection elements
- Learn the operation of IP addressing and subnetting
- Understand the structure of wireless and mobile networks, including the new 5G network
- Know the different network security mechanisms, as well as the different Internet security protocols

### Module 16. Emerging Technologies

- Know the different mobile technologies and services currently available on the market
- Learn how to design user experiences adapted to the new emerging technologies available today
- Know the new developments in the world of extended reality, with AR and VR applications and services, as well as location-based services
- Understand how the Internet of Things (IOT) works, its fundamentals, main components, cloud computing and smart cities
- Acquire the basic knowledge to understand the fundamentals of blockchain and blockchain-based applications and services
- Learn the latest innovative technologies and the basics of research

### Module 17. Information Systems Security

- Learning schedule development for time management, budget development and risk response
- Analyze the nature of network attacks and the different types of security architectures
- Understand the different system protection techniques and secure code development
- Understand the essential components of botnets and spam, as well as malware and malicious code
- Lay the foundations for forensic analysis in the world of software and computer audits
- Obtain a global perspective on security, cryptography and classical cryptanalysis
- Understand the fundamentals of symmetric cryptography and asymmetric cryptography, as well as their main algorithms

### Module 18. Integration Systems

- Acquire the essential concepts related to information systems in the enterprise, as well as identify the opportunities and needs of information systems in the enterprise
- Know the basics of Business Intelligence, its strategies and implementation, as well as its present and future
- Understand the functioning of systems for the integrated management of company resources
- Understand digital transformation from the point of view of business innovation, financial and production management, marketing and human resources management

03

# Skills

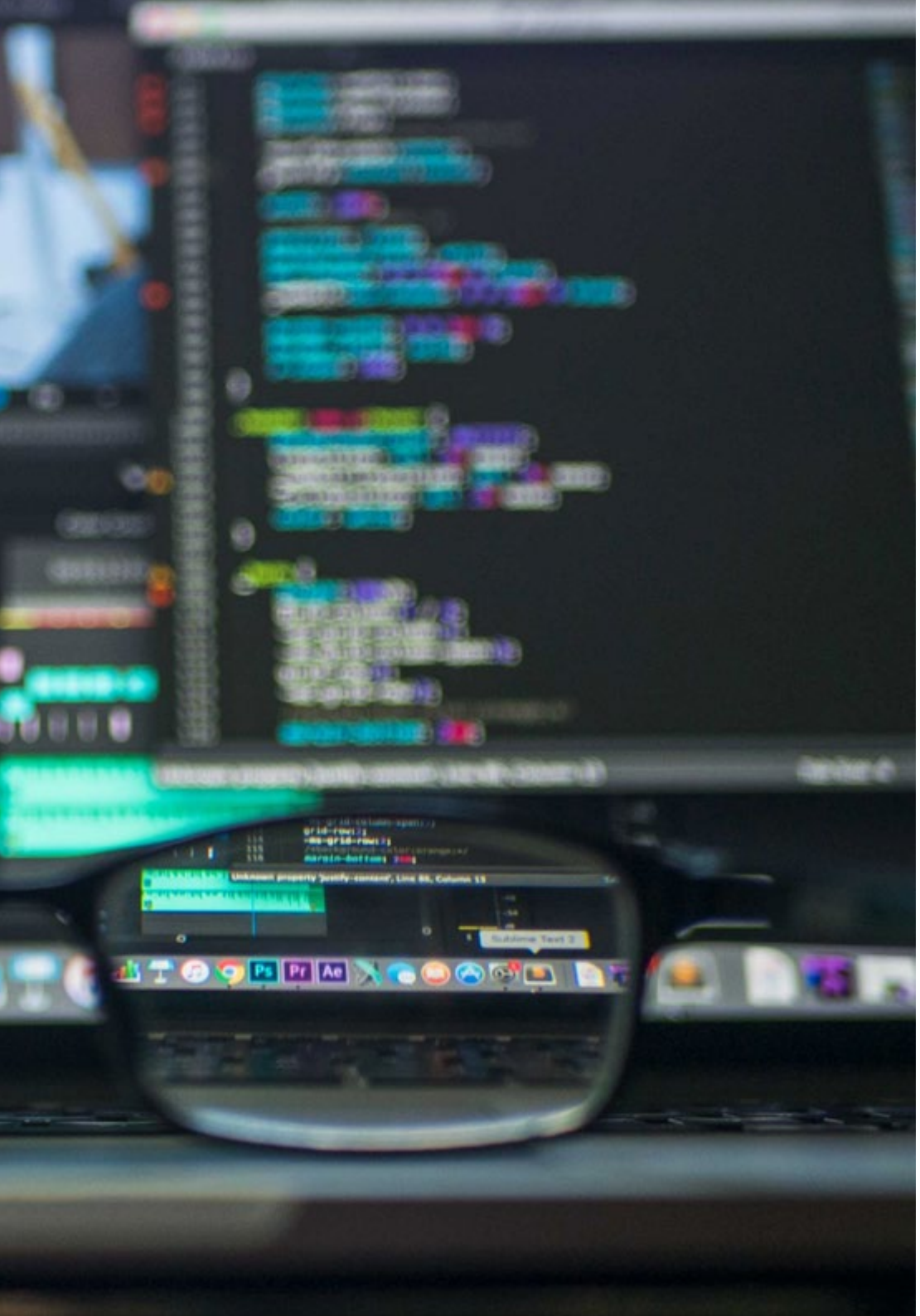
Becoming an Information Systems Management professional requires a broad specialization, beyond what is studied in university courses. Therefore, this Advanced Master's Degree at TECH has been created to solve the lack of specific and up-to-date knowledge in this area on the part of IT professionals, who, within this program, will find a unique opportunity to improve their knowledge and skills and be able to adequately manage all aspects related to these new technologies.

*Master the information systems applied to your company and offer that extra quality in your work that is so demanded in the labor market"*

## General skills

- Manage a company as a whole, applying leadership techniques that influence the employees' performance, in such a way that the company's objectives are achieved
- Be part of and lead the company's corporate and competitive strategy
- Correctly perform the tasks related to computer systems
- Competently manage the information systems of the companies

*A complete program that will help you grow professionally in a sector that is increasingly in demand"*



## Specific skills

- Correctly manage teams to improve productivity and, therefore, the company's profits
- Exercise economic and financial control of a company
- Control the company's logistics processes, as well as purchasing and procurement
- Delve into the new business models associated with information systems
- Apply the most appropriate strategies to support e-commerce of the company's products
- Develop and lead marketing plans
- Focus on innovation in all processes and areas of the company
- Lead the different projects in a company
- Master the concepts of fields, waves and electromagnetism, electric circuit theory, electronic circuits, physical principle of semiconductors and logic families, among others, to solve possible problems related to these areas
- Know, understand and evaluate the structure and architecture of computers
- Know the structure, organization, operation and interconnection of computer systems
- Perform programming of computers, operating systems, databases and software
- Understand operating systems and designing applications for their services
- Know and understand the main characteristics of free software
- Know the characteristics of computer networks and perform applications associated with them
- Use tools to store, process and access information systems
- Gain knowledge of possible network attacks and security systems in order to prevent them
- Know the information systems in the company

04

# Structure and Content

TECH has compiled the most up-to-date information in the field of Information Systems Management (CIO, Chief Information Officer) so that computer scientists can find, in a single program, the necessary teaching support to improve their education and become a successful Chief Information Officer. Undoubtedly, it is an Advanced Master's Degree that will mark a before and after in their education and will give them the opportunity to increase their employability options.

*A complete syllabus that will bring you closer to the latest concepts in business management and IT systems in order to become a successful Chief Information Officer"*

## **Module 1.** Leadership, Ethics, and CSR

1.1. Globalization and Governance
- 1.1.1. Globalization and Trends: Market Internationalization
- 1.1.2. Economic Environment and Corporate Governance
- 1.1.3. Accountability

1.2. Leadership
- 1.2.1. Intercultural Environment
- 1.2.2. Leadership and Business Management
- 1.2.3. Management Roles and Responsibilities

1.3. Business Ethics
- 1.3.1. Ethics and Integrity
- 1.3.2. Ethical Behavior in Companies
- 1.3.3. Deontology, Codes of Ethics and Codes of Conduct
- 1.3.4. Fraud and Corruption Prevention

1.4. Sustainability
- 1.4.1. Business and Sustainable Development
- 1.4.2. Social, Environmental, and Economic Impact
- 1.4.3. The 2030 Agenda and the SDGs

1.5. Corporate Social Responsibility
- 1.5.1. Corporate Social Responsibility
- 1.5.2. Roles and Responsibilities
- 1.5.3. Implementing Corporate Social Responsibility

## **Module 2.** Strategic Direction and Executive Management

2.1. Organizational Analysis and Design
- 2.1.1. Organizational Culture
- 2.1.2. Organizational Analysis
- 2.1.3. Designing the Organizational Structure

2.2. Corporate Strategy
- 2.2.1. Corporate-Level Strategy
- 2.2.2. Types of Corporate-Level Strategies
- 2.2.3. Determining the Corporate Strategy
- 2.2.4. Corporate Strategy and Reputational Image

2.3. Strategic Planning and Strategy Formulation
- 2.3.1. Strategic Thinking
- 2.3.2. Strategic Planning and Formulation
- 2.3.3. Sustainability and Corporate Strategy

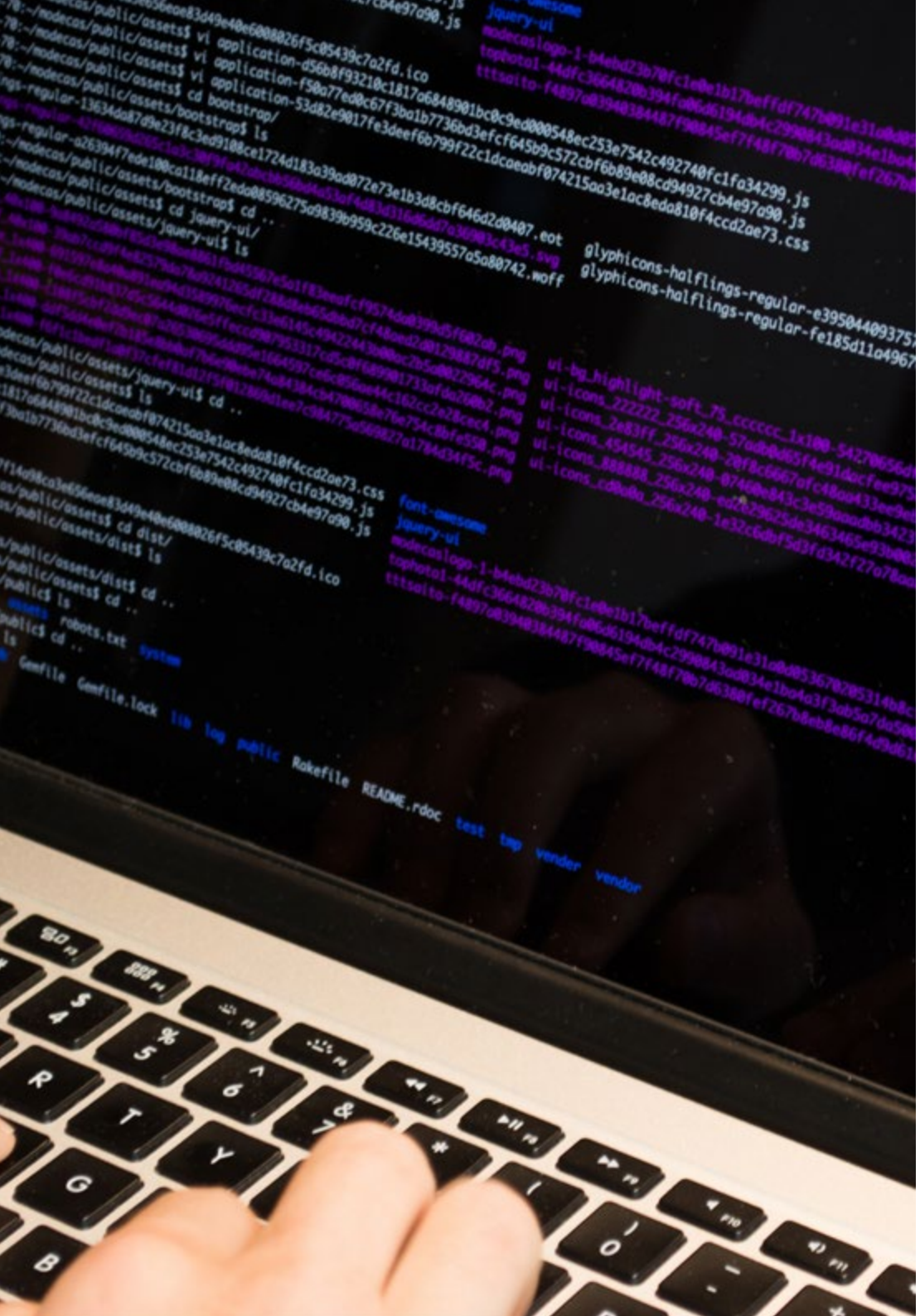
2.4. Strategy Models and Patterns
- 2.4.1. Wealth, Value, and Return on Investments
- 2.4.2. Corporate Strategy: Methodologies
- 2.4.3. Growing and Consolidating the Corporate Strategy

2.5. Strategic Management
- 2.5.1. Strategic Mission, Vision, and Values
- 2.5.2. Balanced Scorecard
- 2.5.3. Analyzing, Monitoring, and Evaluating the Corporate Strategy
- 2.5.4. Strategic Management and Reporting

2.6. Implementing and Executing Strategy
- 2.6.1. Strategic Implementation: Objectives, Actions and Impacts
- 2.6.2. Supervision and Strategic Alignment
- 2.6.3. Continuous Improvement Approach

2.7. Executive Management
- 2.7.1. Integrating Functional Strategies into the Global Business Strategies
- 2.7.2. Management Policy and Processes
- 2.7.3. Knowledge Management

2.8. Analyzing and Solving Cases/Problems
- 2.8.1. Problem Solving Methodology
- 2.8.2. Case Method
- 2.8.3. Positioning and Decision-Making



## **Module 3.** People and Talent Management

3.1. Organizational Behavior
- 3.1.1. Organizational Theory
- 3.1.2. Key Factors for Change in Organizations
- 3.1.3. Corporate Strategies, Types, and Knowledge Management

3.2. Strategic People Management
- 3.2.1. Job Design, Recruitment, and Selection
- 3.2.2. Human Resources Strategic Plan: Design and Implementation
- 3.2.3. Job Analysis: Design and Selection of People
- 3.2.4. Training and Professional Development

3.3. Management and Leadership Development
- 3.3.1. Management Skills: 21st Century Skills and Abilities
- 3.3.2. Non-Managerial Skills
- 3.3.3. Map of Skills and Abilities
- 3.3.4. Leadership and People Management

3.4. Change Management
- 3.4.1. Performance Analysis
- 3.4.2. Strategic Approach
- 3.4.3. Change Management: Key Factors, Process Design and Management
- 3.4.4. Continuous Improvement Approach

3.5. Negotiation and Conflict Management
- 3.5.1. Negotiation Objectives: Differentiating Elements
- 3.5.2. Effective Negotiation Techniques
- 3.5.3. Conflicts: Factors and Types
- 3.5.4. Efficient Conflict Management: Negotiation and Communication

3.6. Executive Communication
- 3.6.1. Performance Analysis
- 3.6.2. Leading Change. Resistance to Change
- 3.6.3. Managing Change Processes
- 3.6.4. Managing Multicultural Teams

3.7. Team Management and People Performance
- 3.7.1. Multicultural and Multidisciplinary Environment
- 3.7.2. Team and People Management
- 3.7.3. Coaching and People Performance
- 3.7.4. Executive Meetings: Planning and Time Management

3.8. Knowledge and Talent Management
- 3.8.1. Identifying Knowledge and Talent in Organizations
- 3.8.2. Corporate Knowledge and Talent Management Models
- 3.8.3. Creativity and Innovation

## **Module 4.** Economic and Financial Management

4.1. Economic Environment
- 4.1.1. Organizational Theory
- 4.1.2. Key Factors for Change in Organizations
- 4.1.3. Corporate Strategies, Types, and Knowledge Management

4.2. Executive Accounting
- 4.2.1. International Accounting Framework
- 4.2.2. Introduction to the Accounting Cycle
- 4.2.3. Company Financial Statements
- 4.2.4. Analysis of Financial Statements: Decision-Making

4.3. Budget and Management Control
- 4.3.1. Budgetary Planning
- 4.3.2. Management Control: Design and Objectives
- 4.3.3. Supervision and Reporting

4.4. Corporate Tax Responsibility
- 4.4.1. Corporate Tax Responsibility
- 4.4.2. Tax Procedure: A Case-Country Approach

4.5. Corporate Control Systems
- 4.5.1. Types of Control
- 4.5.2. Legal/Regulatory Compliance
- 4.5.3. Internal Auditing
- 4.5.4. External Auditing

4.6. Financial Management
- 4.6.1. Introduction to Financial Management
- 4.6.2. Financial Management and Corporate Strategy
- 4.6.3. Chief Financial Officer (CFO): Managerial Skills

4.7. Financial Planning
- 4.7.1. Business Models and Financing Needs
- 4.7.2. Financial Analysis Tools
- 4.7.3. Short-Term Financial Planning
- 4.7.4. Long-Term Financial Planning

4.8. Corporate Financial Strategy
- 4.8.1. Corporate Financial Investments
- 4.8.2. Strategic Growth: Types

4.9. Macroeconomic Context
- 4.9.1. Macroeconomic Analysis
- 4.9.2. Economic Indicators
- 4.9.3. Economic Cycle

4.10. Strategic Financing
- 4.10.1. Banking Business: Current Environment
- 4.10.2. Risk Analysis and Management

4.11. Money and Capital Markets
- 4.11.1. Fixed Income Market
- 4.11.2. Equity Market
- 4.11.3. Valuation of Companies

4.12. Analyzing and Solving Cases/Problems
- 4.12.1. Problem Solving Methodology
- 4.12.2. Case Method

## **Module 5.** Operations and Logistics Management

5.1. Operations Management
- 5.1.1. Define the Operations Strategy
- 5.1.2. Supply Chain Planning and Control
- 5.1.3. Indicator Systems

5.2. Purchasing Management
- 5.2.1. Stock Management
- 5.2.2. Warehouse Management
- 5.2.3. Purchasing and Procurement Management

5.3. Supply Chain Management (I)
- 5.3.1. Costs and Efficiency of the Operations Chain
- 5.3.2. Change in Demand Patterns
- 5.3.3. Change in Operations Strategy

5.4. Supply Chain Management (II). Implementation
- 5.4.1. Lean Manufacturing/Lean Thinking
- 5.4.2. Logistics Management
- 5.4.3. Purchasing

5.5. Logistical Processes
- 5.5.1. Organization and Management by Processes
- 5.5.2. Procurement, Production, Distribution
- 5.5.3. Quality, Quality Costs, and Tools
- 5.5.4. After-Sales Service

5.6. Logistics and Customers
- 5.6.1. Demand Analysis and Forecasting
- 5.6.2. Sales Forecasting and Planning
- 5.6.3. Collaborative Planning, Forecasting, and Replacement

5.7. International Logistics
- 5.7.1. Customs, Export and Import processes
- 5.7.2. Methods and Means of International Payment
- 5.7.3. International Logistics Platforms

5.8. Competing through Operations
- 5.8.1. Innovation in Operations as a Competitive Advantage in the Company
- 5.8.2. Emerging Technologies and Sciences
- 5.8.3. Information Systems in Operations

## **Module 6.** Information Systems Management

6.1. Information Systems Management
- 6.1.1. Business Information Systems
- 6.1.2. Strategic Decisions
- 6.1.3. The Role of the CIO

6.2. Information Technology and Business Strategy
- 6.2.1. Company and Industry Sector Analysis
- 6.2.2. Online Business Models
- 6.2.3. The Value of IT in a Company

6.3. IS Strategic Planning
- 6.3.1. The Process of Strategic Planning
- 6.3.2. Formulating the IS Strategy
- 6.3.3. Strategy Implementation Plan

6.4. Information Systems and Business Intelligence
- 6.4.1. CRM and Business Intelligence
- 6.4.2. Business Intelligence Project Management
- 6.4.3. Business Intelligence Architecture

6.5. New ICT-Based Business Models
- 6.5.1. Technology-Based Business Models
- 6.5.2. Innovation Abilities
- 6.5.3. Redesigning the Value Chain Processes

6.6. E-Commerce
- 6.6.1. E-Commerce Strategic Plan
- 6.6.2. Logistics Management and Customer Service in E-Commerce
- 6.6.3. E-Commerce as an Opportunity for Internationalization

6.7. E-Business Strategies
- 6.7.1. Social Media Strategies
- 6.7.2. Optimizing Service Channels and Customer Support
- 6.7.3. Digital Regulation

6.8. Digital Business
- 6.8.1. Mobile E-Commerce
- 6.8.2. Design and Usability
- 6.8.3. E-Commerce Operations

## **Module 7.** Commercial Management, Marketing, and Corporate Communication

7.1. Commercial Management
- 7.1.1. Sales Management
- 7.1.2. Commercial Strategy
- 7.1.3. Sales and Negotiation Techniques
- 7.1.4. Management of Sales Teams

7.2. Marketing
- 7.2.1. Marketing and the Impact on the Company
- 7.2.2. Basic Marketing Variables
- 7.2.3. Marketing Plan

7.3. Strategic Marketing Management
- 7.3.1. Sources of Innovation
- 7.3.2. Current Trends in Marketing
- 7.3.3. Marketing Tools
- 7.3.4. Marketing Strategy and Communication with Customers

7.4. Digital Marketing Strategy
- 7.4.1. Approach to Digital Marketing
- 7.4.2. Digital Marketing Tools
- 7.4.3. Inbound Marketing and the Evolution of Digital Marketing

7.5. Sales and Communication Strategy
- 7.5.1. Positioning and Promotion
- 7.5.2. Public Relations
- 7.5.3. Sales and Communication Strategy

7.6. Corporate Communication
- 7.6.1. Internal and External Communication
- 7.6.2. Communication Departments
- 7.6.3. Communication Managers: Managerial Skills and Responsibilities

7.7. Corporate Communication Strategy
- 7.7.1. Corporate Communication Strategy
- 7.7.2. Communication Plan
- 7.7.3. Press Release/Clipping/Publicity Writing

## **Module 8.** Innovation and Project Management

8.1. Innovation
- 8.1.1. Conceptual Framework for Innovation
- 8.1.2. Types of Innovation
- 8.1.3. Continuous and Discontinuous Innovation
- 8.1.4. Training and Innovation

8.2. Innovation from Strategy
- 8.2.1. Innovation and Corporate Strategy
- 8.2.2. Global Innovation Project: Design and Management
- 8.2.3. Innovation Workshops

8.3. Business Model Design and Validation
- 8.3.1. The Lean Start-Up Methodology
- 8.3.2. Innovative Business Initiative: Stages
- 8.3.3. Financing Arrangements
- 8.3.4. Model Tools: Empathy Map, Canvas Model, and Metrics
- 8.3.5. Growth and Loyalty

8.4. Project Management
- 8.4.1. Innovation Opportunities
- 8.4.2. Feasibility Study and Proposal Specification
- 8.4.3. Project Definition and Design
- 8.4.4. Project Implementation
- 8.4.5. Project Closure

## **Module 9.** Physical Fundamentals of Computing

9.1. Fundamental Forces
- 9.1.1. Newton's Second Law
- 9.1.2. The Fundamental Forces of Nature
- 9.1.3. Gravitational Force
- 9.1.4. The Electric Force

9.2. Conservation Laws
- 9.2.1. What is Mass?
- 9.2.2. The Electric Charge
- 9.2.3. The Millikan Experiment
- 9.2.4. Conservation of Linear Momentum

9.3. Energy
- 9.3.1. What is Energy?
- 9.3.2. Measuring Energy
- 9.3.3. Energy Types
- 9.3.4. Dependence on the Observer's Energy
- 9.3.5. Potential Energy
- 9.3.6. Derivation of Potential Energy
- 9.3.7. Energy Conservation
- 9.3.8. Energy Units

9.4. Electric Field
- 9.4.1. Static Electricity
- 9.4.2. Electric Field
- 9.4.3. Capacity
- 9.4.4. Potential

9.5. Electrical Circuits
- 9.5.1. Circulation of Electric Charge
- 9.5.2. Batteries
- 9.5.3. Alternating Current

9.6. Magnetism
- 9.6.1. Introduction and Magnetic Materials
- 9.6.2. Magnetic Field
- 9.6.3. Electromagnetic Introduction

9.7. Electromagnetic Spectrum
- 9.7.1. Maxwell's Equations
- 9.7.2. Optics and Electromagnetic Waves
- 9.7.3. The Michelson Morley Experiment

9.8. The Atom and Subatomic Particles
- 9.8.1. The Atom
- 9.8.2. The Atomic Nucleus
- 9.8.3. Radioactivity

9.9. Quantum Physics
- 9.9.1. Color and Heat
- 9.9.2. Photoelectric Effect
- 9.9.3. Matter Waves
- 9.9.4. Nature as Probability

9.10. Relativity
- 9.10.1. Gravity, Space and Time
- 9.10.2. Lorentz Transformations
- 9.10.3. Speed and Time
- 9.10.4. Energy, Momentum and Mass

## **Module 10.** Computer Technology

10.1. General Information and a Brief History of Computers
- 10.1.1. Organization and Architecture
- 10.1.2. Brief History of Computers

10.2. Computer Arithmetic
- 10.2.1. The Arithmetic-Logic Unit
- 10.2.2. Numbering Systems
- 10.2.3. Integer Representation
- 10.2.4. Arithmetic with Integers
- 10.2.5. Floating Point Representation
- 10.2.6. Floating Point Arithmetic

10.3. Classic Concepts of Logic Design
- 10.3.1. Boolean Algebra
- 10.3.2. Logic Gates
- 10.3.3. Logical Simplification
- 10.3.4. Combinational Circuits
- 10.3.5. Sequential Circuits
- 10.3.6. Concept of Sequential Machine
- 10.3.7. Memory Element
- 10.3.8. Types of Memory Elements
- 10.3.9. Synthesis of Sequential Circuits
- 10.3.10. Synthesis of Sequential Circuits with PLA

10.4. Basic Computer Organization and Operation
- 10.4.1. Introduction
- 10.4.2. Components of a Computer
- 10.4.3. Operation of a Computer
- 10.4.4. Interconnection Structures
- 10.4.5. Interconnection with Buses
- 10.4.6. PCI Bus

10.5. Internal Memory
- 10.5.1. Introduction to Memory Systems in Computers
- 10.5.2. Semiconductor Main Memory
- 10.5.3. Correction of Errors
- 10.5.4. Advanced DRAM Memory Organization

10.6. Input/Output
- 10.6.1. External Devices
- 10.6.2. Input/Output Modules
- 10.6.3. Scheduled Input/Output
- 10.6.4. Input/Output via Interrupts
- 10.6.5. Direct Memory Access
- 10.6.6. Input/Output Channels and Processors

10.7. Machine Instructions: Features and Functions
- 10.7.1. Characteristics of Machine Instructions
- 10.7.2. Types of Operands
- 10.7.3. Types of Transactions
- 10.7.4. Assembly Language
- 10.7.5. Address
- 10.7.6. Formats of Instructions

10.8. Processor Structure and Operation
- 10.8.1. Processor Organization
- 10.8.2. Record Organization
- 10.8.3. Training Cycle
- 10.8.4. Instruction Segmentation

10.9. Cache and External Memory
- 10.9.1. Basic Principles of Cache Memories
- 10.9.2. Cache Design Elements
- 10.9.3. Magnetic Disk
- 10.9.4. RAID
- 10.9.5. Optical Memory
- 10.9.6. Magnetic Tape

10.10. Introduction to the Operation of the Control Unit
- 10.10.1. Microoperations
- 10.10.2. Processor Control
- 10.10.3. Wired Implementation

## **Module 11.** The Structure of Computers

11.1. Fundamentals of Computer Design and Evolution
- 11.1.1. Definition of Computer Architecture
- 11.1.2. Evolution and Performance of Architectures
- 11.1.3. Parallel Architectures and Levels of Parallelism

11.2. Computer Performance Evaluation
- 11.2.1. Performance Measures
- 11.2.2. Test Programs (Benchmarks)
- 11.2.3. Improved Performance
- 11.2.4. Costs of a Computer

11.3. Leveraging the Memory Hierarchy
- 11.3.1. Memory Hierarchy
- 11.3.2. Basic Concepts of the Cache
- 11.3.3. Cache Evaluation and Improvements
- 11.3.4. Virtual Memory

11.4. Storage and Other Input/Output Aspects
- 11.4.1. Reliability, Dependability and Availability
- 11.4.2. Disk Storage
- 11.4.3. Flash Storage
- 11.4.4. Connection and Information Transfer Systems

11.5. Segmented Processors
- 11.5.1. What are Segmented Processors?
- 11.5.2. Principles of Segmentation and Performance Enhancement
- 11.5.3. Segmented Processor Design
- 11.5.4. Optimization of Functional Channels
- 11.5.5. Interrupt Handling on a Segmented Processor

11.6. Superscalar Processors
- 11.6.1. What are Superscalar Processors?
- 11.6.2. Parallelism between Instructions and Machine Parallelism
- 11.6.3. Superscalar Instruction Processing
- 11.6.4. Jump Instruction Processing
- 11.6.5. Interrupt Handling on a Superscalar Processor

11.7. VLIW Processors
- 11.7.1. What are VLIW Processors?
- 11.7.2. Exploiting Parallelism in VLIW Architectures
- 11.7.3. Compiler Support Resources

11.8. Vector Processors
- 11.8.1. What are Vector Processors?
- 11.8.2. Vector Architecture
- 11.8.3. The Memory System in Vector Processors
- 11.8.4. Performance Measurements on Vector Processors
- 11.8.5. Vector Processing Efficiency

11.9. Parallel Computers
- 11.9.1. Parallel Architectures and Levels of Parallelism
- 11.9.2. Motivation to the Study of Parallel Computers
- 11.9.3. Design Space. Classification and General Structure
- 11.9.4. Performance on Parallel Computers
- 11.9.5. Classification of Communication Systems in Parallel Computers
- 11.9.6. General Structure of the Communication System in Parallel Computers
- 11.9.7. The Network Interface in Parallel Computers
- 11.9.8. The Interconnection Network in Parallel Computers
- 11.9.9. Communication System Performance on Parallel Computers

11.10. Interconnection Networks and Multiprocessors
- 11.10.1. Topology and Types of Interconnection Networks
- 11.10.2. Switching in Interconnection Networks
- 11.10.3. Flow Control in Interconnection Networks
- 11.10.4. Routing in Interconnection Networks
- 11.10.5. Memory System Coherence on Multiprocessors
- 11.10.6. Multiprocessor Memory Consistency
- 11.10.7. Multiprocessor Synchronization

## **Module 12.** Operating Systems

12.1. Introduction to Operating Systems
- 12.1.1. Concept
- 12.1.2. Historical Recap
- 12.1.3. Fundamental Building Blocks of Operating Systems
- 12.1.4. Objectives and Functions of Operating Systems

12.2. Structure of Operating Systems
- 12.2.1. Operating System Services
- 12.2.2. Operating System User Interface
- 12.2.3. System Calls
- 12.2.4. Types of System Calls

12.3. Process Planning
- 12.3.1. Basic Concepts
- 12.3.2. Planning Criteria
- 12.3.3. Planning Algorithms

12.4. Processes and Threads
- 12.4.1. Process Concept
- 12.4.2. Thread Concept
- 12.4.3. Process Status
- 12.4.4. Process Control

12.5. Concurrence. Mutual Exclusion, Synchronization, and Interlocking
- 12.5.1. Principles of Concurrence
- 12.5.2. Mutual Exclusion
- 12.5.3. Traffic Lights
- 12.5.4. Monitors
- 12.5.5. Message Passing
- 12.5.6. Fundamentals of Interlocking
- 12.5.7. Interlock Prevention
- 12.5.8. Interlock Avoidance
- 12.5.9. Interlock Detection and Recovery

12.6. Memory Management
- 12.6.1. Memory Management Requirements
- 12.6.2. Process Memory Model
- 12.6.3. Contiguous Assignment Scheme
- 12.6.4. Segmentation
- 12.6.5. Pagination
- 12.6.6. Segmented Pagination

12.7. Virtual Memory
- 12.7.1. Virtual Memory Fundamentals
- 12.7.2. Life Cycle of a Page
- 12.7.3. Virtual Memory Management Policy
- 12.7.4. Localization Policy
- 12.7.5. Extraction Policy
- 12.7.6. Replacement Policy

12.8. Input/Output System
- 12.8.1. Input/Output Devices
- 12.8.2. Input/Output System Organization
- 12.8.3. Use of Buffers
- 12.8.4. Magnetic Disk

12.9. File System Interface and Implementation
- 12.9.1. Archiving Concept
- 12.9.2. Access Methods
- 12.9.3. Directory Structure
- 12.9.4. Structure of a File System
- 12.9.5. File System Interface and Implementation
- 12.9.6. Directories System Interface and Implementation
- 12.9.7. Allocation Methods
- 12.9.8. Management of Free Space

12.10. Protection
- 12.10.1. Objectives
- 12.10.2. Authentication
- 12.10.3. Authorization
- 12.10.4. Cryptography

## **Module 13.** Advanced Operating System

13.1. Concept of System Operations
- 13.1.1. Operating System Functions
- 13.1.2. Process Management
- 13.1.3. Memory Management
- 13.1.4. Directory and File Management
- 13.1.5. The Shell: Interactivity
- 13.1.6. Security
- 13.1.7. Design Objectives

13.2. History of Operating Systems
- 13.2.1. The First Generation
- 13.2.2. The Second Generation
- 13.2.3. Third Generation
- 13.2.4. Fourth Generation
- 13.2.5. The OS/2 Case
- 13.2.6. The History of GNU/Linux
- 13.2.7. The History of Windows

13.3. Structure of an Operating System
- 13.3.1. Monolithic Systems
- 13.3.2. Layered Systems
- 13.3.3. Virtualization
- 13.3.4. Exokernel
- 13.3.5. Client-Server Model
- 13.3.6. Distributed Systems

13.4. System Calls
- 13.4.1. System Calls. Concepts
- 13.4.2. System Calls for Process Management
- 13.4.3. System Calls for File and Directory Administration
- 13.4.4. Calls to the Communication System

13.5. Windows and GNU/Linux
- 13.5.1. Windows Structure
- 13.5.2. Structure of GNU/Linux

13.6. The GNU/Linux Shell and PowerShell
- 13.6.1. The Command Interpreter
- 13.6.2. Using the Command Interpreter
- 13.6.3. GNU/Linux Commands
- 13.6.4. Basic PowerShell Syntax
- 13.6.5. Basic PowerShell Commands

13.7. Shell Programming
- 13.7.1. Scripts Programming
- 13.7.2. Syntax

13.8. System Programming in GNU/Linux
- 13.8.1. C Language under UNIX
- 13.8.2. Compilation Tools
- 13.8.3. Error Handling

13.9. System Calls on Files
- 13.9.1. Basic Calls
- 13.9.2. Calls on Directories
- 13.9.3. Advanced Calls

13.10. System Calls on Processes
- 13.10.1. Basic Calls
- 13.10.2. Signals
- 13.10.3. Pipelines

## **Module 14.** Free Software and Open Knowledge

14.1. Introduction to Free Software
- 14.1.1. History of Free Software
- 14.1.2. "Freedom" in Software
- 14.1.3. Licenses for the Use of Software Tools
- 14.1.4. Intellectual Property of Software
- 14.1.5. What is the Motivation for Using Free Software?
- 14.1.6. Free Software Myths
- 14.1.7. Top500

14.2. Open Knowledge and CC Licenses
- 14.2.1. Basic Concepts
- 14.2.2. Creative Commons Licenses
- 14.2.3. Other Content Licenses
- 14.2.4. Wikipedia and Other Open Knowledge Projects

14.3. Main Free Software Tools
- 14.3.1. Operating Systems
- 14.3.2. Office Applications
- 14.3.3. Business Management Applications
- 14.3.4. Web Content Managers
- 14.3.5. Multimedia Content Creation Tools
- 14.3.6. Other Applications

14.4. The Company: Free Software and its Costs
- 14.4.1. Free Software: Yes or No?
- 14.4.2. Truths and Lies about Free Software
- 14.4.3. Business Software Based on Free Software
- 14.4.4. Software Costs
- 14.4.5. Free Software Models

14.5. The GNU/Linux Operating System
- 14.5.1. Architecture
- 14.5.2. Basic Directory Structure
- 14.5.3. File System Characteristics and Structure
- 14.5.4. Internal Representation of the Files

14.6. The Android Mobile Operating System
- 14.6.1. History
- 14.6.2. Architecture
- 14.6.3. Android Forks
- 14.6.4. Introduction to Android Development
- 14.6.5. Frameworks for Mobile Application Development

14.7. Website Creation with WordPress
- 14.7.1. WordPress Features and Structure
- 14.7.2. Creation of Sites on WordPress.com
- 14.7.3. Installation and Configuration of WordPress on your own Server
- 14.7.4. Installing Plugins and Expansion of WordPress
- 14.7.5. Creation of WordPress Plugins
- 14.7.6. WordPress Theme Creation

14.8. Free Software Trends
- 14.8.1. Cloud Environments
- 14.8.2. Monitoring Tools
- 14.8.3. Operating Systems
- 14.8.4. Big Data and Open Data 2.0
- 14.8.5. Quantum Computing

14.9. Version Control
- 14.9.1. Basic Concepts
- 14.9.2. Git
- 14.9.3. Cloud and Self-Hosted Git Services
- 14.9.4. Other Version Control Systems

14.10. Custom GNU/Linux Distributions
- 14.10.1. Main Distributions
- 14.10.2. Distributions Derived from Debian
- 14.10.3. Deb Package Creation
- 14.10.4. Modification of the Distribution
- 14.10.5. ISO Image Generation

## **Module 15.** Computer Networks

15.1. Computer Networks on the Internet
- 15.1.1. Networks and Internet
- 15.1.2. Protocol Architecture

15.2. The Application Layer
- 15.2.1. Model and Protocols
- 15.2.2. FTP and SMTP Services
- 15.2.3. DNS Service
- 15.2.4. HTTP Operation Model
- 15.2.5. HTTP Message Formats
- 15.2.6. Interaction with Advanced Methods

15.3. The Transport Layer
- 15.3.1. Communication between Processes
- 15.3.2. Connection-Oriented Transportation: TCP and SCTP

15.4. The Network Layer
- 15.4.1. Circuit and Packet Switching
- 15.4.2. IP Protocol (v4 and v6)
- 15.4.3. Routing Algorithms

15.5. The Link Layer
- 15.5.1. Link Layer and Error Detection and Correction Techniques
- 15.5.2. Multiple Access Links and Protocols
- 15.5.3. Link Level Addressing

15.6. LAN Networks
- 15.6.1. Network Topologies
- 15.6.2. Network and Interconnection Elements

15.7. IP Addressing
- 15.7.1. IP Addressing and Subnetting
- 15.7.2. Overview: An HTTP Request

15.8. Wireless and Mobile Networks
- 15.8.1. 2G, 3G and 4G Mobile Networks and Services
- 15.8.2. 5G Networks

15.9. Network Security
- 15.9.1. Fundamentals of Communications Security
- 15.9.2. Access Control
- 15.9.3. System Security
- 15.9.4. Fundamentals of Cryptography
- 15.9.5. Digital Signature

15.10. Internet Security Protocols
- 15.10.1. IP Security and Virtual Private Networks (VPN)
- 15.10.2. Web Security with SSL/TLS

## **Module 16.** Emerging Technologies

16.1. Mobile Technologies
- 16.1.1. Mobile Devices
- 16.1.2. Mobile Communications

16.2. Mobile Services
- 16.2.1. Types of Applications
- 16.2.2. Decision on the Type of Mobile Application
- 16.2.3. Mobile Interaction Design

16.3. Location-Based Services
- 16.3.1. Location-Based Services
- 16.3.2. Technologies for Mobile Localization
- 16.3.3. GNSS-Based Localization
- 16.3.4. Precision and Accuracy in Localization Technologies
- 16.3.5. Beacons: Location by Proximity

16.4. User Experience (UX) Design
- 16.4.1. Introduction to User Experience (UX)
- 16.4.2. Technologies for Mobile Localization
- 16.4.3. Methodology for UX Design
- 16.4.4. Best Practices in the Prototyping Process

16.5. Extended Reality
- 16.5.1. Extended Reality Concepts
- 16.5.2. Technologies for Mobile Localization
- 16.5.3. AR and VR Application and Services

16.6. Internet of Things (IoT). (I)
- 16.6.1. IoT Fundamentals
- 16.6.2. IoT Devices and Communications

16.7. Internet of Things (IoT). (II)
- 16.7.1. Beyond Cloud Computing
- 16.7.2. Smart Cities
- 16.7.3. Digital Twins
- 16.7.4. IoT Projects

16.8. Blockchain
- 16.8.1. Blockchain Fundamentals
- 16.8.2. Blockchain-Based Applications and Services

16.9. Autonomous Driving
- 16.9.1. Technologies for Autonomous Driving
- 16.9.2. V2X Communications

16.10. Innovative Technology and Research
- 16.10.1. Fundamentals of Quantum Computing
- 16.10.2. Applications of Quantum Computing
- 16.10.3. Introduction to Research

## **Module 17.** Information Systems Security

17.1. A Global Perspective on Security, Cryptography and Classical Cryptanalysis
- 17.1.1. Computer Security: Historical Perspective
- 17.1.2. But What Exactly is Meant by Security?
- 17.1.3. History of Cryptography
- 17.1.4. Substitution Ciphers
- 17.1.5. Case Study: The Enigma Machine

17.2. Symmetric Cryptography
- 17.2.1. Introduction and Basic Terminology
- 17.2.2. Symmetric Encryption
- 17.2.3. Modes of Operation
- 17.2.4. DES
- 17.2.5. The New AES Standard
- 17.2.6. Encryption in Flow
- 17.2.7. Cryptanalysis

17.3. Asymmetric Cryptography
- 17.3.1. Origins of Public Key Cryptography
- 17.3.2. Basic Concepts and Operation
- 17.3.3. The RSA Algorithm
- 17.3.4. Digital Certificates
- 17.3.5. Key Storage and Management

17.4. Network Attacks
- 17.4.1. Network Threats and Attacks
- 17.4.2. Enumeration
- 17.4.3. Traffic Interception: Sniffers
- 17.4.4. Denial of Service Attacks
- 17.4.5. ARP Poisoning Attacks

17.5. Security Architectures
- 17.5.1. Traditional Security Architectures
- 17.5.2. Secure Socket Layer: SSL
- 17.5.3. SSH Protocol
- 17.5.4. Virtual Private Networks (VPNs)
- 17.5.5. External Storage Unit Protection Mechanisms
- 17.5.6. Hardware Protection Mechanisms

17.6. System Protection Techniques and Secure Code Development
- 17.6.1. Operational Safety
- 17.6.2. Resources and Controls
- 17.6.3. Monitoring
- 17.6.4. Intrusion Detection Systems
- 17.6.5. Host IDS
- 17.6.6. Network IDS
- 17.6.7. Signature-Based IDS
- 17.6.8. Lure Systems
- 17.6.9. Basic Security Principles in Code Development
- 17.6.10. Failure Management
- 17.6.11. Public Enemy Number 1: Buffer Overflows
- 17.6.12. Cryptographic Botches

17.7. Botnets and Spam
- 17.7.1. Origin of the Problem
- 17.7.2. Spam Process
- 17.7.3. Sending Spam
- 17.7.4. Refinement of Mailing Lists
- 17.7.5. Protection Techniques
- 17.7.6. Anti-Spam Service offered by Third Parties
- 17.7.7. Study Cases
- 17.7.8. Exotic Spam

17.8. Web Auditing and Attacks
- 17.8.1. Information Gathering
- 17.8.2. Attack Techniques
- 17.8.3. Tools

17.9. Malware and Malicious Code
- 17.9.1. What is Malware?
- 17.9.2. Types of Malware
- 17.9.3. Virus
- 17.9.4. Cryptovirus
- 17.9.5. Worms
- 17.9.6. Adware
- 17.9.7. Spyware
- 17.9.8. Hoaxes
- 17.9.9. Phishing
- 17.9.10. Trojans
- 17.9.11. The Economy of Malware
- 17.9.12. Possible Solutions

17.10. Forensic Analysis
- 17.10.1. Evidence Collection
- 17.10.2. Evidence Analysis
- 17.10.3. Anti-Forensic Techniques
- 17.10.4. Case Study

## **Module 18.** Integration Systems

18.1. Introduction to Information Systems in the Company
- 18.1.1. The Role of Information Systems
- 18.1.2. What is an Information System?
- 18.1.3. Dimensions of Information Systems
- 18.1.4. Business Processes and Information Systems
- 18.1.5. l Department of SI/TI

18.2. Opportunities and Needs of Information Systems in the Company
- 18.2.1. Organizations and Information Systems
- 18.2.2. Features of Organizations
- 18.2.3. Impact of Information Systems in the Company
- 18.2.4. Information Systems to Achieve a Competitive Advantage
- 18.2.5. Use of Systems in the Administration and Management of the Company

18.3. Basic Concepts of Information Systems and Technologies
- 18.3.1. Data, Information and Knowledge
- 18.3.2. Technology and Information Systems
- 18.3.3. Technology Components
- 18.3.4. Classification and Types of Information Systems
- 18.3.5. Service and Business Process Based Architectures
- 18.3.6. Forms of Systems Integration

18.4. Systems for the Integrated Management of Company Resources
- 18.4.1. Business Needs
- 18.4.2. An Integrated Information System for the Company
- 18.4.3. Acquisition vs. Development
- 18.4.4. ERP Implementation
- 18.4.5. Implications for Management
- 18.4.6. Leading ERP Vendors

18.5. Supply Chain and Customer Relationship Management Information Systems
- 18.5.1. Definition of Supply Chain
- 18.5.2. Effective Supply Chain Management
- 18.5.3. The Role of Information Systems
- 18.5.4. Supply Chain Management Solutions
- 18.5.5. Customer Relationship Management
- 18.5.6. The Role of Information Systems
- 18.5.7. Implementation of a CRM System
- 18.5.8. Critical Success Factors in CRM Implementation
- 18.5.9. CRM, e-CRM and Other Trends

18.6. ICT Investment Decision-Making and Information Systems Planning
- 18.6.1. Criteria for ICT Investment Decisions
- 18.6.2. Linking the Project to the Management and Business Plan
- 18.6.3. Management Implications
- 18.6.4. Redesign of Business Processes
- 18.6.5. Management's Decision on Implementation Methodologies
- 18.6.6. Need for Information Systems Planning
- 18.6.7. Objectives, Participants and Moments
- 18.6.8. Structure and Development of the Systems Planning
- 18.6.9. Follow-Up and Updating

18.7. Security Considerations in the Use of ICTs
- 18.7.1. Risk Analysis
- 18.7.2. Security in Information Systems
- 18.7.3. Practical Advice

18.8. Feasibility of ICT Project Implementation and Financial Aspects in Information Systems Projects
- 18.8.1. Description and Objectives
- 18.8.2. EVS Participants
- 18.8.3. Techniques and Procedures
- 18.8.4. Cost structure
- 18.8.5. Financial Projection
- 18.8.6. Budgets

18.9. Business Intelligence
- 18.9.1. What is Business Intelligence?
- 18.9.2. BI Implementation Strategy
- 18.9.3. Present and Future in BI

18.10. ISO/IEC 12207
- 18.10.1. What is "ISO/IEC 12207"?
- 18.10.2. Analysis of Information Systems
- 18.10.3. Information System Design
- 18.10.4. Implementation and Acceptance of the Information System

05

# 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"*

## 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"*

*You will have access to a learning system based on repetition, with natural and progressive teaching throughout the entire syllabus.*

*The student will learn to solve complex situations in real business environments through collaborative activities and real cases.*

## A learning method that is different and innovative

This TECH program is an intensive educational program, created from scratch, which presents the most demanding challenges and decisions in this field, both nationally and internationally. 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 professional reality is taken into account.

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

The case method has been the most widely used learning system among the world's leading Information Technology 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 that you are presented with in the case method, an action-oriented learning method. Throughout the course, students will be presented with multiple real cases. They will have to combine all their knowledge and research, and argue and defend their ideas and decisions.

## Relearning Methodology

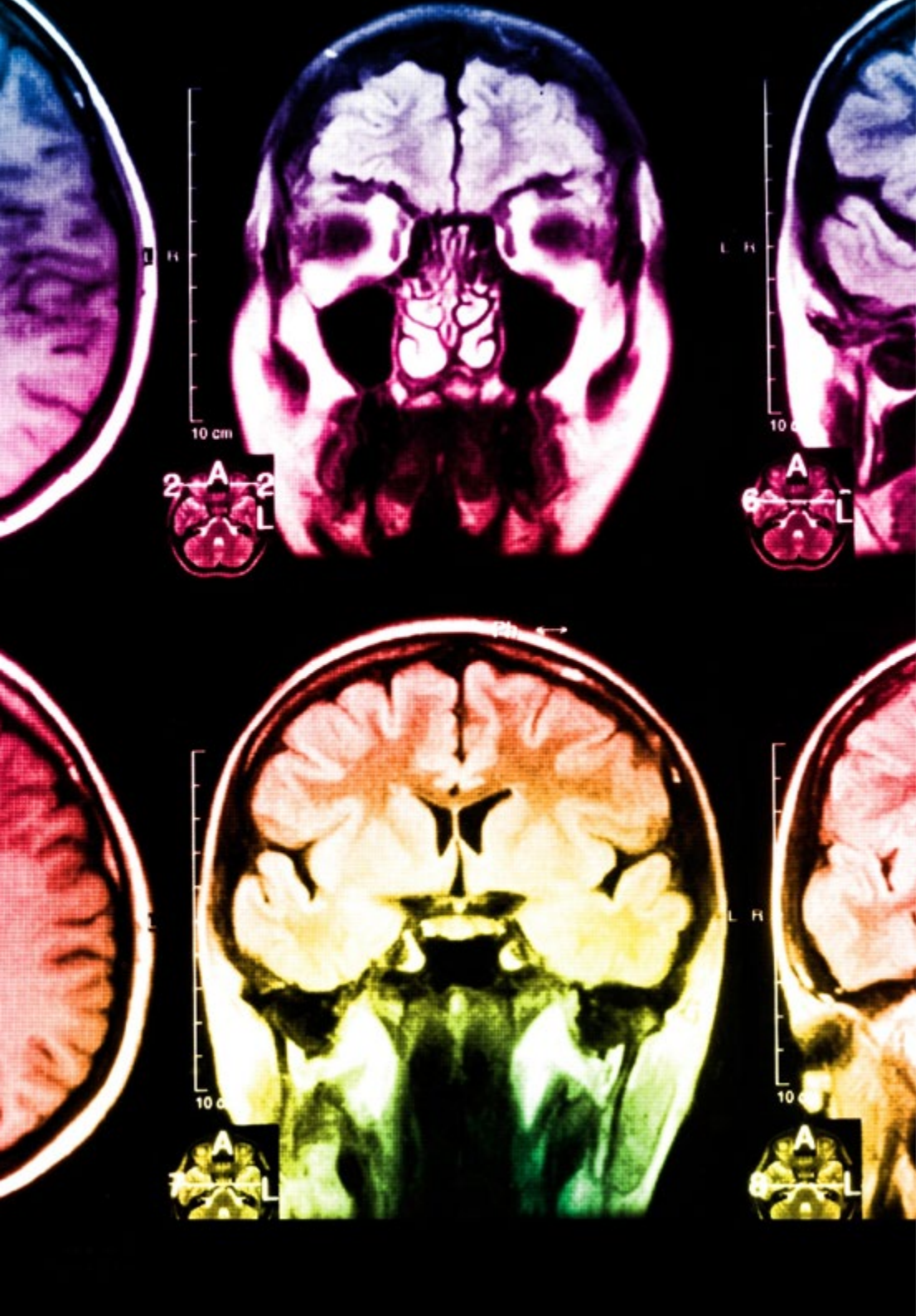
TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines different teaching elements in each lesson.

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

*In 2019, we obtained the best learning results of all online universities in the world.*

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



In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically. This methodology has 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, and financial markets and 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 training, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation for 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.

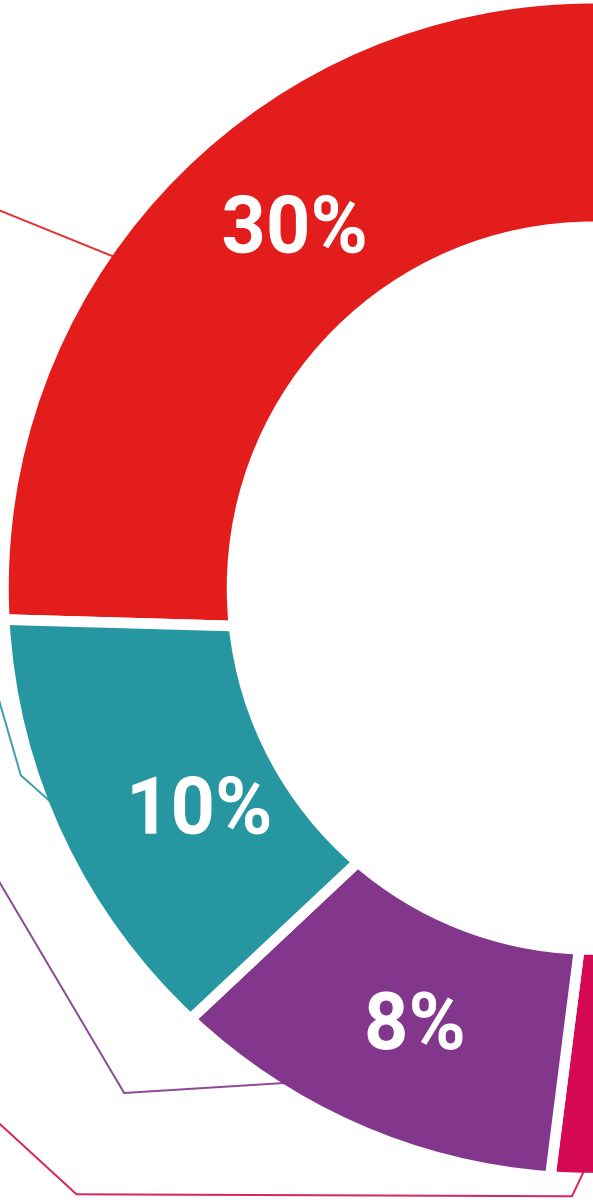
Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

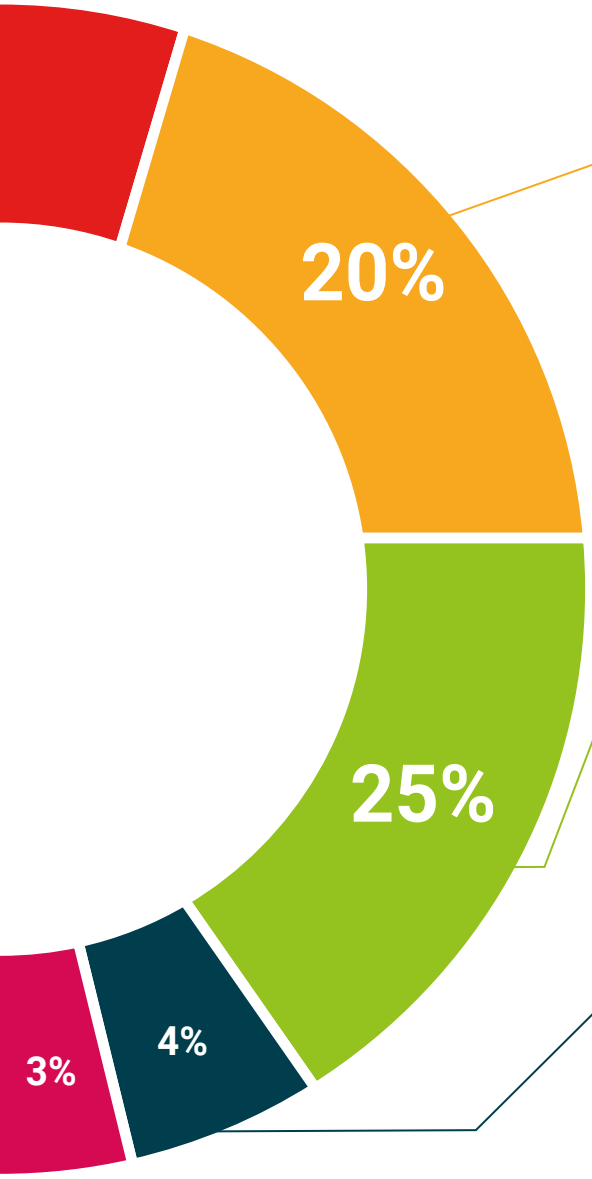
### Practising Skills and Abilities

They will carry out activities to develop specific skills and abilities in each subject area. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop in the context of the globalization that we are experiencing.

### Additional Reading

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






### Case Studies

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

06

# Certificate

The Advanced Master's Degree in Information Systems Management (CIO, Chief Information Officer) guarantees you, in addition to the most rigorous and up-to-date training, access to a Advanced Master's Degree issued by TECH Global University.

*Successfully complete this program and receive your university degree without travel or laborious paperwork"*

This program will allow you to obtain your **Advanced Master's Degree diploma in Information Systems Management (CIO, Chief Information Officer)** 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** title 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 Information Systems Management (CIO, Chief Information Officer)**

Modality: **online**

Duration: **2 years**

Accreditation: **120 ECTS**

tech global university

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

**Advanced Master's Degree in Information Systems Management (CIO, Chief Information Officer)**

This is a program of 3,000 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
Rector

This qualification must always be accompanied by the university degree issued by the competent authority to practice professionally in each country. Unique TECH Code: AFWORD23S techtitute.com/certificates

Advanced Master's Degree in Information Systems Management (CIO, Chief Information Officer)

General Structure of the Syllabus

| Year | Subject | ECTS | Type | Year | Subject | ECTS | Type |
|---|---|---|---|---|---|---|---|
| 1º | Leadership, Ethics, and CSR | 7 | CO | 2º | Computer Technology | 7 | CO |
| 1º | Strategic Direction and Executive Management | 7 | CO | 2º | The Structure of Computers | 7 | CO |
| 1º | People and Talent Management | 7 | CO | 2º | Operating Systems | 7 | CO |
| 1º | Economic and Financial Management | 7 | CO | 2º | Advanced Operating System | 6 | CO |
| 1º | Operations and Logistics Management/ | 7 | CO | 2º | Free Software and Open Knowledge | 6 | CO |
| 1º | Information Systems Management | 7 | CO | 2º | Computer Networks | 6 | CO |
| 1º | Commercial Management, Marketing, and Corporate Communication | 7 | CO | 2º | Emerging Technologies | 6 | CO |
| | | | | 2º | Information Systems Security | 6 | CO |
| 1º | Innovation and Project Management | 7 | CO | 2º | Integration Systems | 6 | CO |
| 1º | Physical Fundamentals of Computing | 7 | CO | | | | |

Dr. Pedro Navarro Illana
Rector

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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

## Information Systems Management (CIO, Chief Information Officer)

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

# Advanced Master's Degree

## Information Systems Management (CIO, Chief Information Officer)

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