Postgraduate Diploma
Operating Systems Management

tech global university

tech global university

Postgraduate Diploma
Operating Systems Management

- Modality: **online**
- Duration: **6 months**
- Certificate: **TECH Global University**
- Credits: **24 ECTS**
- Schedule: **at your own pace**
- Exams: **online**

Website: www.techtitute.com/us/information-technology/postgraduate-diploma/operating-systems-management

Index

01

Introduction

This Postgraduate Diploma is oriented to achieve a high domain in Operating Systems Management, through the latest educational technology 100% Online, in order to update student's knowledge in a practical and rigorous way, from the hand of industry professionals with wide experience in the field. Throughout these months you will acquire necessary knowledge to understand computer arithmetic and basics of logic design.

This Postgraduate Diploma will allow you to update your knowledge on Operating Systems Management in a practical way, 100% Online, without renouncing to the maximum academic rigor"

This program is intended for those interested in achieving a higher level of knowledge in Operating Systems Management. The main objective is to educate students to apply acquired knowledge in this Postgraduate Diploma in the real world, in a work environment that reproduces conditions that can be found in their future, in a rigorous and realistic way.

You will learn in depth the most relevant concepts of computer history, as well as the main types of existing organizations and architectures. Throughout these months, you will deepen your knowledge of Operating Systems, their functions, process management, memory, directories and files, as well as the keys to their security and design objectives. You will also acquire necessary knowledge to understand computer arithmetic and basics of logic design.

The professional should take advantage of opportunity and take this training in a 100% Online format, without having to give up their obligations, and making it easy for them to return to university. Update your knowledge and get your Postgraduate Diploma to continue growing personally and professionally.

This program will allow you to enhance your skills and update your knowledge in Operating Systems Management"

This **Postgraduate Diploma in Operating Systems Management** contains the most complete and up-to-date program on the market. The most important features include:

- Development of 100 simulated scenarios presented by experts in Operating Systems Management
- Its graphic, schematic and practical contents, with which they are created, provide scientific and practical information on Operating Systems Management
- News on latest developments in Operating Systems Management
- Practical exercises where self-assessment can be used to improve learning
- Interactive learning system based on the case method and its application to real practice
- All of this will be complemented by theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- Content that is accessible from any fixed or portable device with an Internet connection

Get qualified in Operating Systems Management with this intensive program, from the comfort of your own home"

Take advantage of the latest educational technology to get updated in Operating Systems Management without leaving home.

Learn the latest techniques in Operating Systems Management from experts in the field.

It includes in its teaching staff a team of professionals belonging to the Computer Engineering field, who pour into this program their work experience, as well as recognized specialists belonging to reference societies and prestigious universities.

Its multimedia content, developed with the latest educational technology, will allow the professional a situated and contextual learning, that is, a simulated environment that will provide an immersive learning programmed to prepare for real situations.

The design of this program focuses on Problem-Based Learning, by means of which the professional must try to solve the different professional practice situations that are presented throughout the academic course. This will be done with the help of an innovative system of interactive videos made by renowned experts in information systems with extensive teaching experience.

02

Objectives

The objective of this training is to provide IT professionals with necessary knowledge and skills to perform their activity using the most advanced protocols and techniques of the moment. Through a work approach that is fully adaptable to the student, this Postgraduate Diploma will progressively lead them to acquire skills that will propel them to a higher professional level.

Achieve professional success as a computer engineer with this intensive program, developed by professionals with wide experience in the sector"

General Objectives

- To educate scientifically and technologically, as well as to prepare for professional practice of Computer Engineering, all this with a transversal and versatile academic experience adapted to new technologies and innovations in this field
- To obtain a wide knowledge in computer science field, computer structure and software engineering, including mathematical, statistical and physical basis essential in engineering

Enroll in the best Postgraduate Diploma program in Operating Systems Management in the current university panorama"

Specific Objectives

- To know computer history, as well as main types of existing organizations and architectures.
- To acquire necessary knowledge to understand computer arithmetic and basics of logic design
- To understand computer operation and composition, from different devices that integrate computer to interacting between and with each other
- To learn the different memory types: internal memory, cache memory and external memory; as well as the operation of input/output devices
- To understand processor structure and operation, as well as the control unit operation and micro-operations
- To learn basics of machine instructions, types, assembly language and addressing.
- To learn basic concepts of Operating Systems, as well as their structure, including services, system calls and user interface
- To understand how process scheduling works in an operating system and in general the concepts related to processes and threads
- To assimilate principles of concurrence, mutual exclusion, synchronization and interlocking.
- To know how memory management works in operating systems and basics of virtual memory and its policies
- To learn about the interface and implementation of Operating Systems, understanding file concepts, file systems, directory structures and their implementation, as well as free space allocation and management methods
- To understand protection mechanisms existing in the Operating Systems
- To deepen operating systems knowledge, their functions, process management, memory, directories and files, as well as the keys to their security and design objectives
- To know step by step different stages of the Operating Systems history
- To understand structure of the main existing Operating Systems
- To learn about two main Operating Systems structure, as well as the use of their terminals
- To learn basics of *Shell scripting* and main tools for C programming
- To understand system calls operation, either on files or processes
- To learn computer design and evolution fundamentals, including parallel architectures and levels of parallelism
- To understand the different ways of evaluating computer's performance, as well as use of programs for performance testing
- To understand memory hierarchy operation, different types of storages and input/output aspects
- To learn the different types and characteristics of processors, such as segmented, superscalar, VLIW and vector processors
- To understand parallel computers operation, their motivation, performance and architecture
- To know characteristics of computer interconnection networks and multiprocessor characteristics

03

Structure and Content

The structure of the contents has been designed by a team of Computer Engineering professionals, aware of current relevance of the education to deepen in this area of knowledge, in order to humanistically enrich students and raise their knowledge level in Operating Systems Management by means of the latest educational technologies available.

This Postgraduate Diploma in Operating Systems Management contains the most complete and updated learning program on the market"

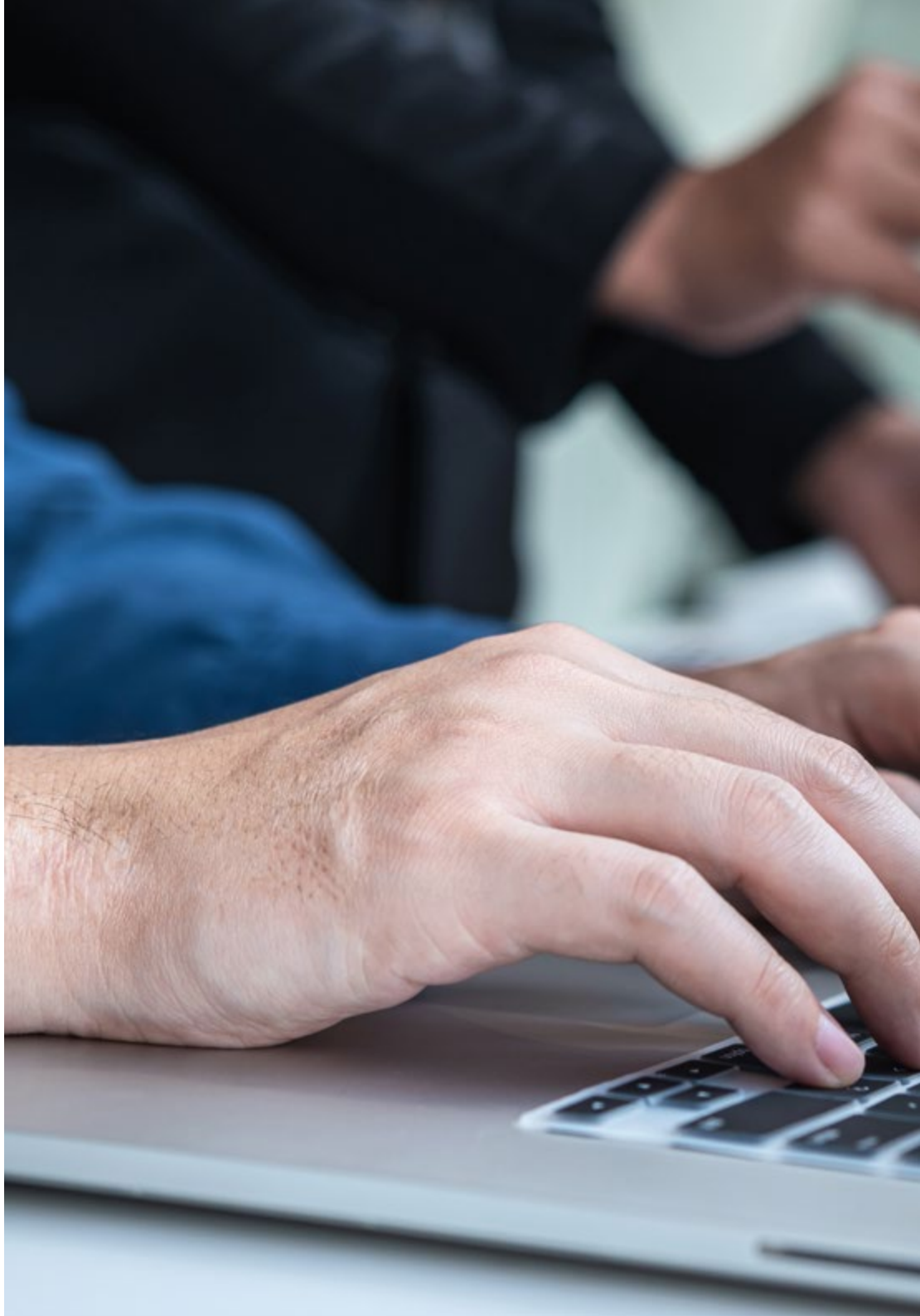
Module 1. Computer Technology

1.1. General Information and a Brief History of Computers
- 1.1.1. Organization and Architecture
- 1.1.2. Brief History of Computers

1.2. Computer Arithmetic
- 1.2.1. The arithmetical unit
- 1.2.2. Numbering Systems
- 1.2.3. Integer Representation
- 1.2.4. Arithmetic with Integers
- 1.2.5. Floating Point Representation
- 1.2.6. Floating Point Arithmetic

1.3. Classic Concepts of Logic Design
- 1.3.1. Boolean Algebra
- 1.3.2. Logic Gates
- 1.3.3. Logical Simplification
- 1.3.4. Combinational Circuits
- 1.3.5. Sequential Circuits
- 1.3.6. Concept of Sequential Machine
- 1.3.7. Memory Element
- 1.3.8. Types of Memory Elements
- 1.3.9. Synthesis of Sequential Circuits
- 1.3.10. Synthesis of Sequential Circuits with PLA

1.4. Basic Computer Organization and Operation
- 1.4.1. Introduction
- 1.4.2. Components of a Computer
- 1.4.3. Operation of a Computer
- 1.4.4. Interconnection Structures
- 1.4.5. Interconnection with Buses
- 1.4.6. PCI Bus



1.5. Internal Memory
- 1.5.1. Introduction to Memory Systems in Computers
- 1.5.2. Semiconductor Main Memory
- 1.5.3. Correction of Errors
- 1.5.4. Advanced DRAM Memory Organization

1.6. Input/Output
- 1.6.1. External Devices
- 1.6.2. Input/Output Modules
- 1.6.3. Programmed input/output
- 1.6.4. Input/output by interrupts
- 1.6.5. Direct Memory Access
- 1.6.6. Input/Output Channels and Processors

1.7. Machine Instructions: Features and Functions
- 1.7.1. Characteristics of Machine Instructions
- 1.7.2. Types of Operands
- 1.7.3. Types of Transactions
- 1.7.4. Assembly Language
- 1.7.5. Address
- 1.7.6. Formats of Instructions

1.8. Processor Structure and Operation
- 1.8.1. Processor Organization
- 1.8.2. Record Organization
- 1.8.3. Training Cycle
- 1.8.4. Instruction Segmentation

1.9. Cache and External Memory
- 1.9.1. Basic Principles of Cache Memories
- 1.9.2. Cache Design Elements
- 1.9.3. Magnetic Disks
- 1.9.4. RAID
- 1.9.5. Optical Memory
- 1.9.6. Magnetic Tape

1.10. Introduction to the Operation of the Control Unit
- 1.10.1. Microoperations
- 1.10.2. Processor Control
- 1.10.3. Wired Implementation

Module 2. Operating Systems

2.1. Introduction to Operating Systems
- 2.1.1. Concept
- 2.1.2. Historical Recap
- 2.1.3. Fundamental blocks of Operating Systems
- 2.1.4. Objectives and Functions of Operating Systems

2.2. Structure of Operating Systems
- 2.2.1. Operating System Services
- 2.2.2. Operating System User Interface
- 2.2.3. System Calls
- 2.2.4. Types of System Calls

2.3. Process Planning
- 2.3.1. Basic Concepts
- 2.3.2. Planning Criteria
- 2.3.3. Planning Algorithms

2.4. Processes and Threads
- 2.4.1. Process Concept
- 2.4.2. Thread Concept
- 2.4.3. Process Status
- 2.4.4. Process Control

2.5. Concurrence. Mutual Exclusion, Synchronization, and Interlocking
- 2.5.1. Principles of Concurrence
- 2.5.2. Mutual Exclusion
- 2.5.3. Traffic Lights
- 2.5.4. Monitors
- 2.5.5. Message Passing
- 2.5.6. Fundamentals of Interlocking
- 2.5.7. Interlock Prevention
- 2.5.8. Interlock Avoidance
- 2.5.9. Interlock Detection and Recovery

2.6. Memory Management
- 2.6.1. Memory Management Requirements
- 2.6.2. Process Memory Model
- 2.6.3. Contiguous Assignment Scheme
- 2.6.4. Segmentation
- 2.6.5. Pagination
- 2.6.6. Segmented Pagination

2.7. Virtual Memory
- 2.7.1. Virtual Memory Fundamentals
- 2.7.2. Life Cycle of a Page
- 2.7.3. Virtual Memory Management Policy
- 2.7.4. Localization Policy
- 2.7.5. Extraction Policy
- 2.7.6. Replacement Policy

2.8. Input/Output System
- 2.8.1. Input/Output Devices
- 2.8.2. Input/Output System Organization
- 2.8.3. Use of Buffers
- 2.8.4. Magnetic Disk

2.9. File System Interface and Implementation
- 2.9.1. Archiving Concept
- 2.9.2. Access Methods
- 2.9.3. Directory Structure
- 2.9.4. Structure of a File System
- 2.9.5. File System Interface and Implementation
- 2.9.6. Directories System Interface and Implementation
- 2.9.7. Allocation Methods
- 2.9.8. Management of Free Space

2.10. Protection
- 2.10.1. Objectives
- 2.10.2. Authentication
- 2.10.3. Authorization
- 2.10.4. Cryptography

Module 3. Advanced Operating Systems

3.1. Operating System Concept
- 3.1.1. Operating System Functions
- 3.1.2. Process Management
- 3.1.3. Memory Management
- 3.1.4. Directory and File Management
- 3.1.5. The *Shell*: Interactivity
- 3.1.6. Security/Safety
- 3.1.7. Design Objectives

3.2. Operating Systems History
- 3.2.1. The First Generation
- 3.2.2. The Second Generation
- 3.2.3. Third Generation
- 3.2.4. Fourth Generation
- 3.2.5. The OS/2 Case
- 3.2.6. The History of GNU/Linux
- 3.2.7. The History of Windows

3.3. Structure of an Operating System
- 3.3.1. Monolithic Systems
- 3.3.2. Layered Systems
- 3.3.3. Virtualisation
- 3.3.4. Exokernel
- 3.3.5. Client-server Model
- 3.3.6. Distributed Systems

3.4. System Calls
- 3.4.1. System Calls. Concepts
- 3.4.2. System Calls for Process Management
- 3.4.3. System Calls for File and Directory Administration
- 3.4.4. Calls to the Communication System

3.5. Windows and GNU/Linux
- 3.5.1. Windows Structure
- 3.5.2. Structure of GNU/Linux

3.6. The GNU/Linux *Shell* and PowerShell
- 3.6.1. The Command Interpreter
- 3.6.2. Using the Command Interpreter
- 3.6.3. GNU/Linux Commands
- 3.6.4. Basic PowerShell Syntax
- 3.6.5. Basic PowerShell Commands

3.7. *Shell* Programming
- 3.7.1. *Scripts* Programming
- 3.7.2. Syntax

3.8. System Programming in GNU/Linux
- 3.8.1. C Language under UNIX
- 3.8.2. Compilation Tools
- 3.8.3. Error Handling

3.9. System Calls on Files
- 3.9.1. Basic Calls
- 3.9.2. Calls on Directories
- 3.9.3. Advanced Calls

3.10. System Calls on Processes
- 3.10.1. Basic Calls
- 3.10.2. Signals
- 3.10.3. Pipelines

Module 4. The Structure of Computers

4.1. Fundamentals of Computer Design and Evolution
- 4.1.1. Definition of Computer Architecture
- 4.1.2. Evolution and Performance of Architectures
- 4.1.3. Parallel Architectures and Levels of Parallelism

4.2. Computer Performance Evaluation
- 4.2.1. Performance Measures
- 4.2.2. Test Programs (*Benchmarks*)
- 4.2.3. Improved Performance
- 4.2.4. Costs of a Computer

4.3. Leveraging the Memory Hierarchy
- 4.3.1. Memory Hierarchy
- 4.3.2. Basic Concepts of the Cache
- 4.3.3. Cache Evaluation and Improvements
- 4.3.4. Virtual Memory

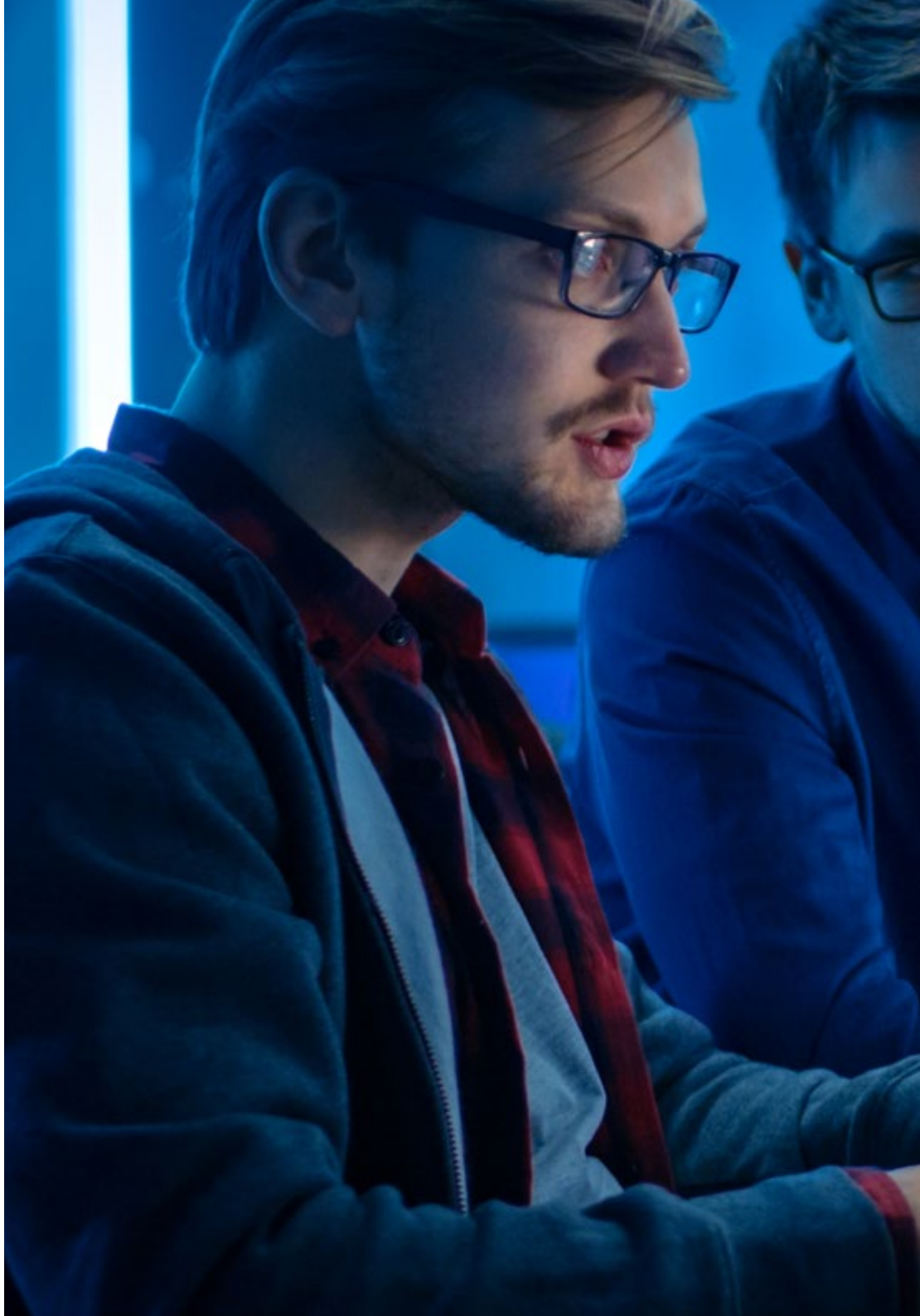
4.4. Storage and Other Input/Output Aspects
- 4.4.1. Reliability, Dependability and Availability
- 4.4.2. Disk Storage
- 4.4.3. Flash Storage
- 4.4.4. Connection and Information Transfer Systems

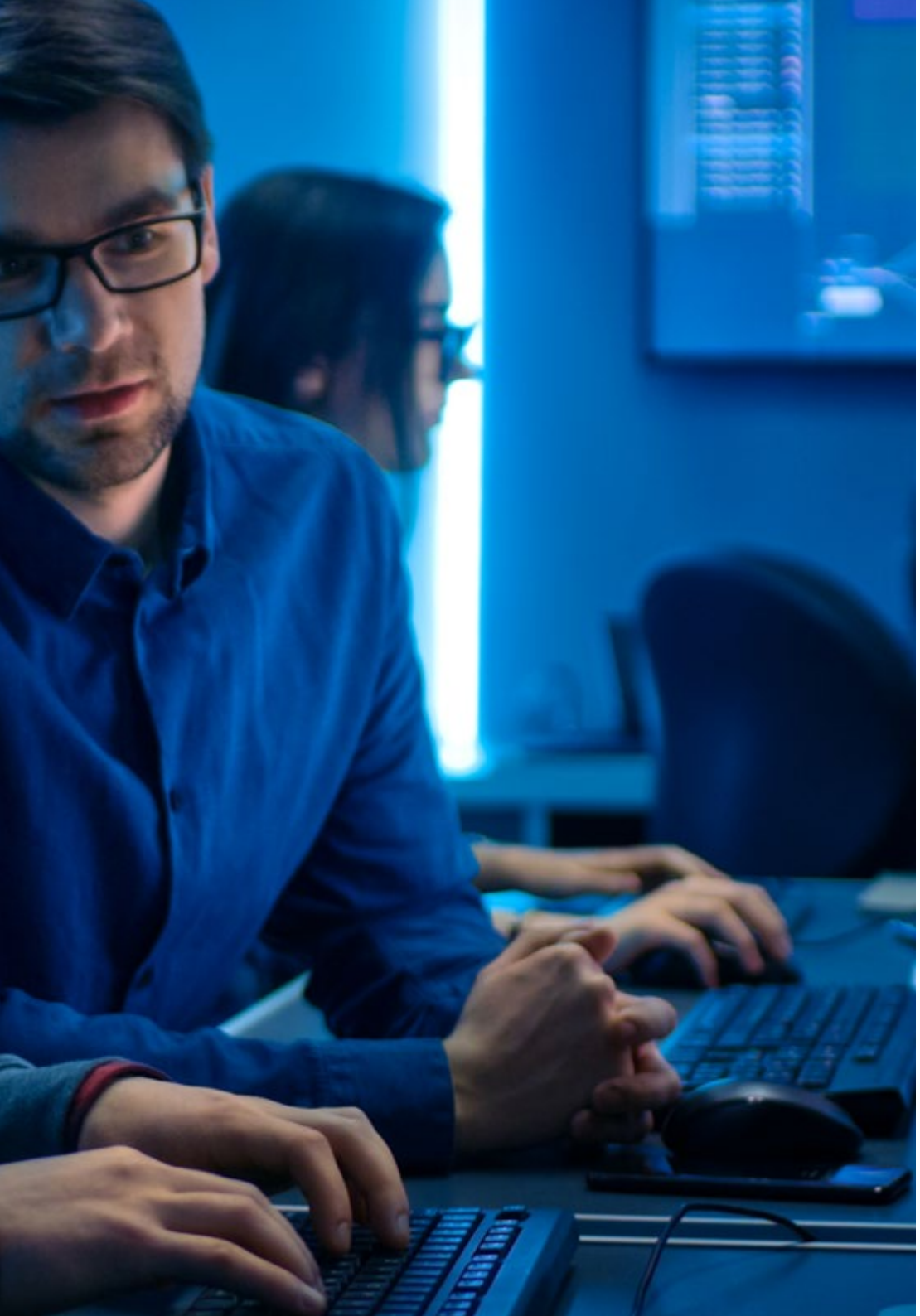
4.5. Segmented Processors
- 4.5.1. What are Segmented Processors?
- 4.5.2. Principles of Segmentation and Performance Enhancement
- 4.5.3. Segmented Processor Design
- 4.5.4. Optimization of Functional Channels
- 4.5.5. Interrupt Handling on a Segmented Processor

4.6. Superscalar Processors
- 4.6.1. What are Superscalar Processors?
- 4.6.2. Parallelism between Instructions and Machine Parallelism
- 4.6.3. Superscalar Instruction Processing
- 4.6.4. Jump Instruction Processing
- 4.6.5. Interrupt Handling on a Superscalar Processor

4.7. VLIW Processors
- 4.7.1. What are VLIW Processors?
- 4.7.2. Exploiting Parallelism in VLIW Architectures
- 4.7.3. Compiler Support Resources

4.8. Vector Processors
- 4.8.1. What are Vector Processors?
- 4.8.2. Vector Architecture
- 4.8.3. The Memory System in Vector Processors
- 4.8.4. Performance Measurements on Vector Processors
- 4.8.5. Vector Processing Efficiency





4.9. Parallel Computers
- 4.9.1. Parallel Architectures and Levels of Parallelism
- 4.9.2. Motivation to the Study of Parallel Computers
- 4.9.3. Design Space. Classification and General Structure
- 4.9.4. Performance on Parallel Computers
- 4.9.5. Classification of Communication Systems in Parallel Computers
- 4.9.6. General Structure of the Communication System in Parallel Computers
- 4.9.7. The Network Interface in Parallel Computers
- 4.9.8. The Interconnection Network in Parallel Computers
- 4.9.9. Communication System Performance on Parallel Computers

4.10. Interconnection Networks and Multiprocessors
- 4.10.1. Topology and Types of Interconnection Networks
- 4.10.2. Switching in Interconnection Networks
- 4.10.3. Flow Control in Interconnection Networks
- 4.10.4. Routing in Interconnection Networks
- 4.10.5. Memory System Coherence on Multiprocessors
- 4.10.6. Multiprocessor Memory Consistency
- 4.10.7. Multiprocessor Synchronization

A unique, key, and decisive educational experience to boost your professional development"

04

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

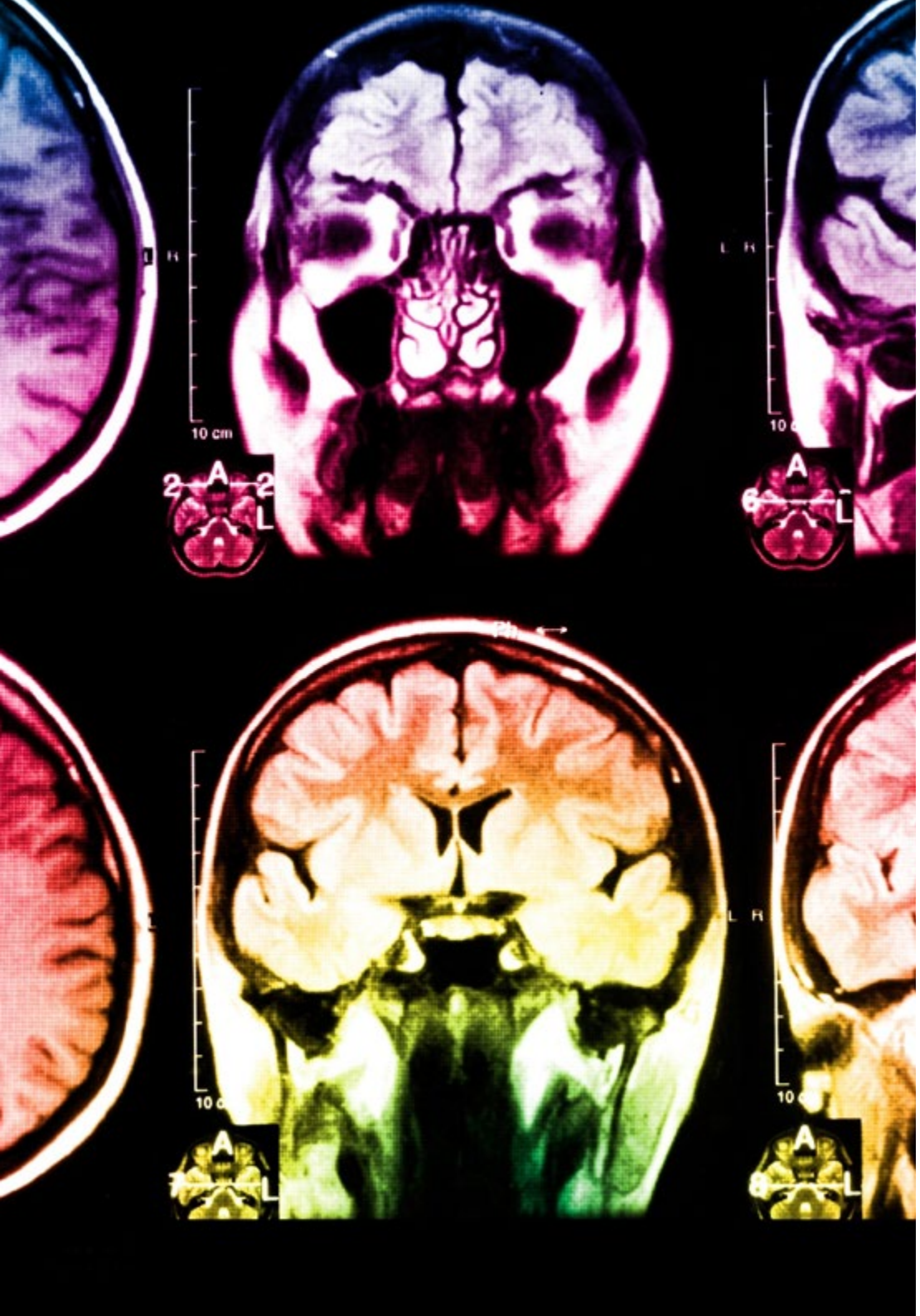
TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines different teaching elements in each lesson.

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.

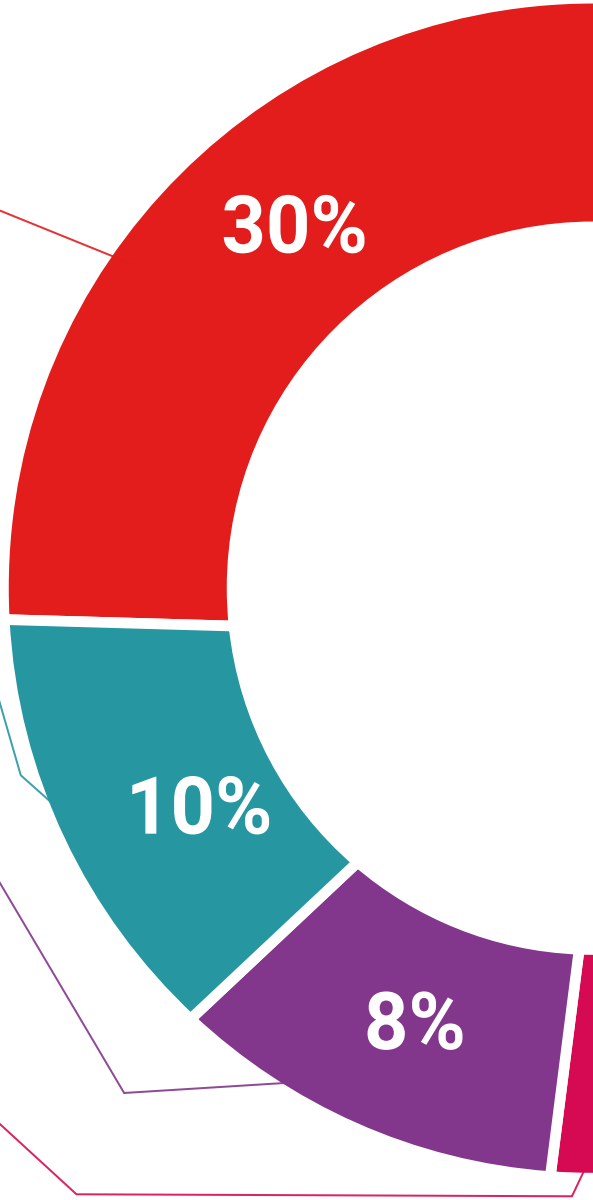
Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

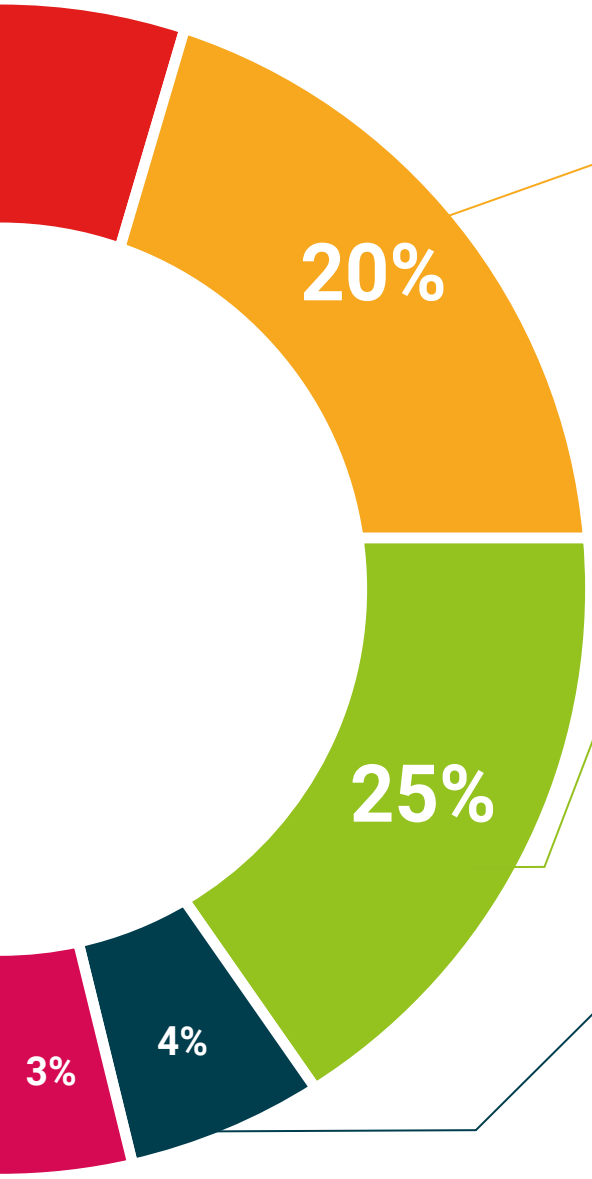
Practising Skills and Abilities

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.

05

Certificate

The Postgraduate Diploma in Operating Systems Management guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Diploma issued by TECH Global University.

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

This program will allow you to obtain your **Postgraduate Diploma in Operating Systems Management** 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: **Postgraduate Diploma in Operating Systems Management**

Modality: **online**

Duration: **6 months**

Accreditation: **24 ECTS**


tech global university

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

Postgraduate Diploma in Operating Systems Management

This is a program of 600 hours of duration equivalent to 24 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

Unique TECH Code: AFWORD23S techtitute.com/certificates

*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.

tech global university

Postgraduate Diploma
Operating Systems Management

- Modality: **online**
- Duration: **6 months**
- Certificate: **TECH Global University**
- Credits: **24 ECTS**
- Schedule: **at your own pace**
- Exams: **online**

Postgraduate Diploma
Operating Systems Management

tech global university