

# Postgraduate Certificate Programming in R





## Postgraduate Certificate Programming in R

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Global University
- » Accreditation: 6 ECTS
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtitute.com/us/engineering/postgraduate-certificate/programming-r](http://www.techtitute.com/us/engineering/postgraduate-certificate/programming-r)

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# 01

# Introduction

R is a programming language that has become increasingly popular in statistics applied to economics. Its importance lies in its ability to handle large data sets and perform advanced statistical analysis. For this reason, TECH has designed a program that allows students to maximize their knowledge on aspects such as R Console, Script Mode, R Objects, Execution Flow Control Structures, Operations with Objects or Functions in R, among others. All this, thanks to a 100% online modality and with the most dynamic and practical multimedia materials in the educational market.





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*Reach your full potential in the field of Statistics Applied to Economics, thanks to the world's largest online university”*

Programming in R offers the ability to create graphs and data visualizations, allowing professionals in this field to present their results more clearly and comprehensibly. The importance of Programming in R in applied statistics for economics is evident in the wide range of analyses it enables, as well as in its capacity to present results in a more accessible and understandable format.

For this reason, TECH Global University has developed a Postgraduate Certificate in Programming in R, designed to equip students with the skills and competencies necessary to perform effectively as specialists in this field. In this way, throughout this program, aspects such as Execution Flow Control Structures, Operations with Objects, Graphics in R and Statistics in R will be addressed.

All this, through a convenient 100% online modality that allows students to organize their schedules and studies, balancing them with their other daily activities. In addition, this program has the most complete theoretical and practical materials on the market, which facilitates the student's study process and allows them to achieve their objectives quickly and efficiently.

This **Postgraduate Certificate in Programming in R** contains the most complete and up-to-date program on the market. The most important features include:

- ◆ The development of practical cases presented by experts in Programming in R
- ◆ The graphic, schematic and practical contents of the program provide Sports and practical information on those disciplines that are essential for professional practice
- ◆ Practical exercises where the self-assessment process can be carried out to improve learning
- ◆ Its special emphasis on innovative methodologies
- ◆ 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



*Become an expert in Graphs and Functions using R in only 6 weeks and with total flexibility”*

“

*Improve your professional profile in aspects such as R Environment and Execution Flow Control Structures, thanks to TECH and the most innovative materials”*

The program includes in its teaching staff professionals from the sector who bring to this program the experience of their work, as well as recognized specialists from leading societies and prestigious universities.

The multimedia content, developed with the latest educational technology, will provide the professional with situated and contextual learning, i.e., a simulated environment that will provide immersive education programmed to learn in real situations.

This program is designed around Problem-Based Learning, whereby the professional must try to solve the different professional practice situations that arise during the course. For this purpose, students will be assisted by an innovative interactive video system created by renowned experts.

*Approach Statistics in R from the comfort of your home and at any time of the day.*

*Access all the content on Programming in R, from your Tablet, mobile or computer.*



# 02

# Objectives

The final objective of this Postgraduate Certificate in Programming in R is that students acquire a precise update of their knowledge in this area. An update that will allow the student to work with the highest possible quality and efficiency. All this, thanks to TECH and a 100% online modality that gives total freedom of organization and schedules to the student.



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*Delve into all the essential aspects of Object Operations and Script Mode in R, without leaving your home and without the need for travel”*



## General Objectives

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- ◆ Apply their knowledge to their profession or vocation in a professional manner, and demonstrate competencies typically reflected in the development and defense of arguments as well as in problem-solving within their field of study
- ◆ Perform basic operations related to data cleaning and validation
- ◆ Use appropriate information sources for each type of applied study
- ◆ Describe the main sources of long-term aggregate output growth in an economy
- ◆ Calculate and apply elasticities and cost-of-living indices





## Specific Objectives

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- ◆ Understand the R working environment
- ◆ Be capable of developing a statistical program in R
- ◆ Become familiar with the different types of functions used in R
- ◆ Use R to support the interpretation and conclusion of statistical data

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*Exceed your highest expectations, thanks to a unique program that offers you the most comprehensive theoretical and practical materials in the academic market”*



# 03

## Structure and Content

The structure and all the teaching resources of this syllabus have been designed by the renowned professionals that make up TECH's team of experts in this area of engineering. These specialists have used their extensive experience and their most advanced knowledge to create practical and completely up-to-date contents. All this, based on the most efficient pedagogical methodology, TECH Relearning.



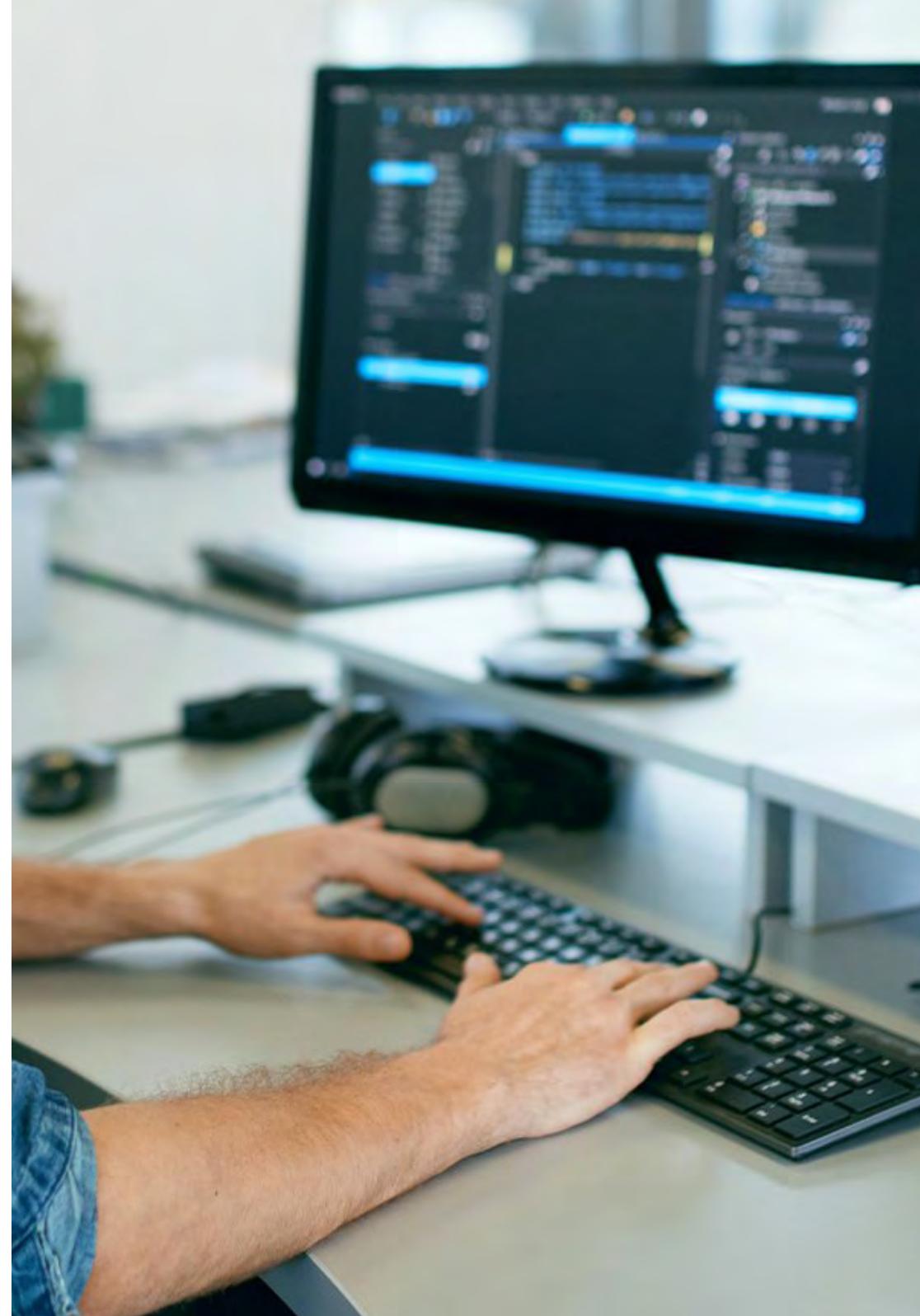


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*Broaden your knowledge of Statistics Applied to Economics, thanks to the most innovative teaching materials and a wide variety of additional content available on the Virtual Campus”*

## Module 1. Statistical Software

- 1.1. Introduction to the R Environment
  - 1.1.1. How R Works
  - 1.1.2. Creating, Listing and Removing Objects in Memory
- 1.2. Console in R
  - 1.2.1. Console Environment in R
  - 1.2.2. Main Controls
- 1.3. Script Mode in R
  - 1.3.1. Console Environment in R
  - 1.3.2. Main Commands
- 1.4. Objects in R
  - 1.4.1. Objects
  - 1.4.2. Reading Data From a File
  - 1.4.3. Saving Data
  - 1.4.4. Generating Data
- 1.5. Execution Flow Control Structures
  - 1.5.1. Conditional Structures
  - 1.5.2. Repetitive/Iterative Structures
  - 1.5.3. Vectors and Arrays
- 1.6. Operations with Objects
  - 1.6.1. Creation of Objects
  - 1.6.2. Converting Objects
  - 1.6.3. Operators
  - 1.6.4. How to Access the Values of an Object: the Indexing System
  - 1.6.5. Accessing an Object's Values with Names
  - 1.6.6. The Data Editor
  - 1.6.7. Simple Arithmetic Functions
  - 1.6.8. Calculations With Arrays





- 1.7. Functions in R
  - 1.7.1. Loops and Vectorization
  - 1.7.2. Writing a Program in R
  - 1.7.3. Creating Your Own Functions
- 1.8. Graphics in R
  - 1.8.1. Handling Graphics
    - 1.8.1.1. Opening Multiple Graphics Devices
    - 1.8.1.2. Laying out a Chart
  - 1.8.2. Graphical Functions
  - 1.8.3. Low-Level Graphing Commands
  - 1.8.4. Graphical Parameters
  - 1.8.5. Grid and Lattice Packages
- 1.9. R Packages
  - 1.9.1. R Library
  - 1.9.2. R Packages
- 1.10. Statistics in R
  - 1.10.1. A Simple Example of Analysis of Variance
  - 1.10.2. Formulas
  - 1.10.3. Generic Functions

“Thanks to the most efficient teaching methodology, TECH Relearning, you will be able to acquire new knowledge in a precise and natural way, without spending too much time studying”

04

# Study Methodology

TECH is the world's first university to combine the **case study** methodology with **Relearning**, a 100% online learning system based on guided repetition.

This disruptive pedagogical strategy has been conceived to offer professionals the opportunity to update their knowledge and develop their skills in an intensive and rigorous way. A learning model that places students at the center of the educational process giving them the leading role, adapting to their needs and leaving aside more conventional methodologies.



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*TECH will prepare you to face new challenges in uncertain environments and achieve success in your career”*

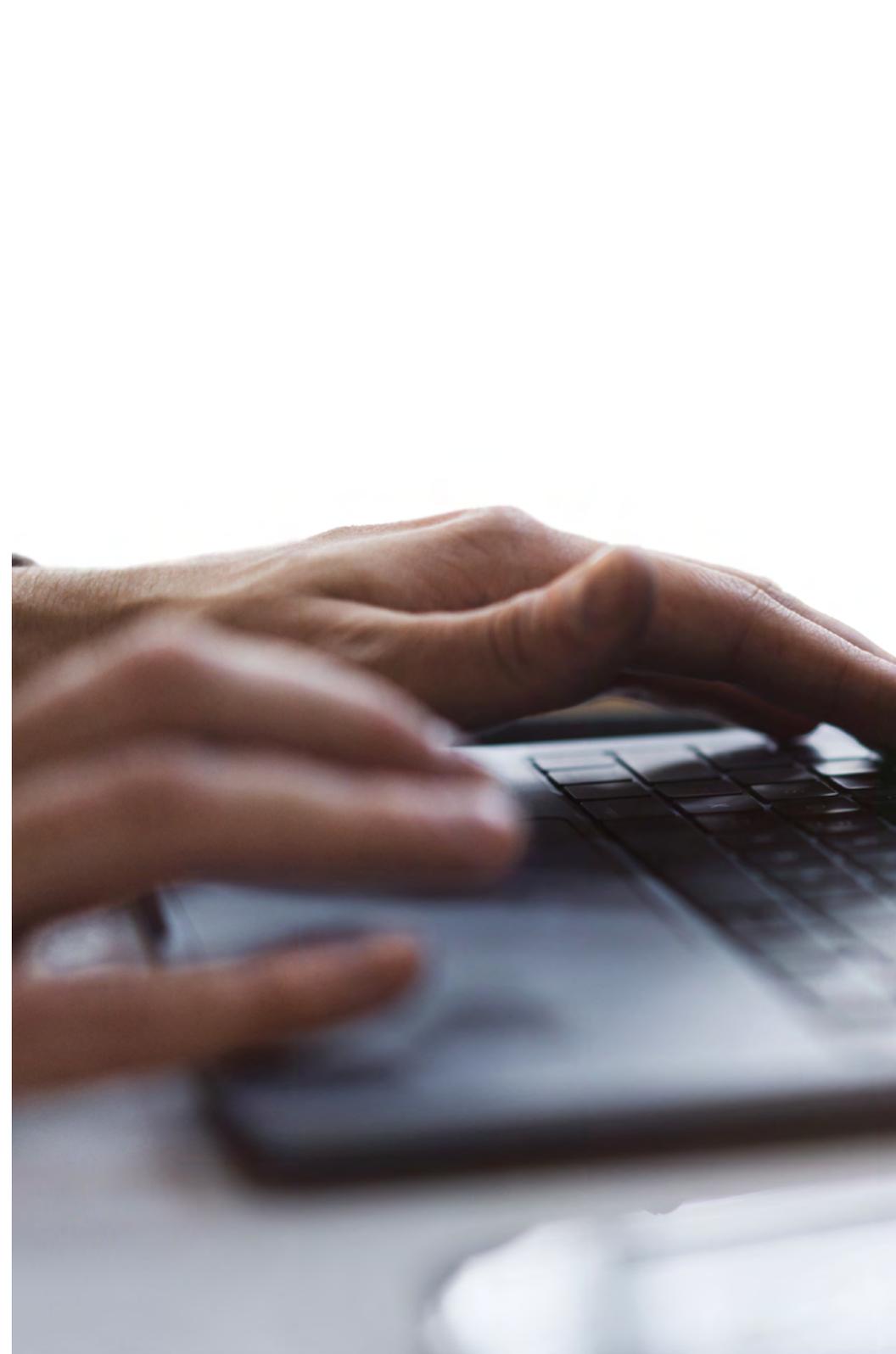
### The student: the priority of all TECH programs

In TECH's study methodology, the student is the main protagonist. The teaching tools of each program have been selected taking into account the demands of time, availability and academic rigor that, today, not only students demand but also the most competitive positions in the market.

With TECH's asynchronous educational model, it is students who choose the time they dedicate to study, how they decide to establish their routines, and all this from the comfort of the electronic device of their choice. The student will not have to participate in live classes, which in many cases they will not be able to attend. The learning activities will be done when it is convenient for them. They can always decide when and from where they want to study.

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*At TECH you will NOT have live classes  
(which you might not be able to attend)”*



### The most comprehensive study plans at the international level

TECH is distinguished by offering the most complete academic itineraries on the university scene. This comprehensiveness is achieved through the creation of syllabi that not only cover the essential knowledge, but also the most recent innovations in each area.

By being constantly up to date, these programs allow students to keep up with market changes and acquire the skills most valued by employers. In this way, those who complete their studies at TECH receive a comprehensive education that provides them with a notable competitive advantage to further their careers.

And what's more, they will be able to do so from any device, pc, tablet or smartphone.

“*TECH's model is asynchronous, so it allows you to study with your pc, tablet or your smartphone wherever you want, whenever you want and for as long as you want*”

## Case Studies and Case Method

The case method has been the learning system most used by the world's best business schools. Developed in 1912 so that law students would not only learn the law based on theoretical content, its function was also to present them with real complex situations. In this way, they could make informed decisions and value judgments about how to resolve them. In 1924, Harvard adopted it as a standard teaching method.

With this teaching model, it is students themselves who build their professional competence through strategies such as Learning by Doing or Design Thinking, used by other renowned institutions such as Yale or Stanford.

This action-oriented method will be applied throughout the entire academic itinerary that the student undertakes with TECH. Students will be confronted with multiple real-life situations and will have to integrate knowledge, research, discuss and defend their ideas and decisions. All this with the premise of answering the question of how they would act when facing specific events of complexity in their daily work.



## Relearning Methodology

At TECH, case studies are enhanced with the best 100% online teaching method: Relearning.

This method breaks with traditional teaching techniques to put the student at the center of the equation, providing the best content in different formats. In this way, it manages to review and reiterate the key concepts of each subject and learn to apply them in a real context.

In the same line, and according to multiple scientific researches, reiteration is the best way to learn. For this reason, TECH offers between 8 and 16 repetitions of each key concept within the same lesson, presented in a different way, with the objective of ensuring that the knowledge is completely consolidated during the study process.

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



## A 100% online Virtual Campus with the best teaching resources

In order to apply its methodology effectively, TECH focuses on providing graduates with teaching materials in different formats: texts, interactive videos, illustrations and knowledge maps, among others. All of them are designed by qualified teachers who focus their work on combining real cases with the resolution of complex situations through simulation, the study of contexts applied to each professional career and learning based on repetition, through audios, presentations, animations, images, etc.

The latest scientific evidence in the field of Neuroscience points to the importance of taking into account the place and context where the content is accessed before starting a new learning process. Being able to adjust these variables in a personalized way helps people to remember and store knowledge in the hippocampus to retain it in the long term. This is a model called Neurocognitive context-dependent e-learning that is consciously applied in this university qualification.

In order to facilitate tutor-student contact as much as possible, you will have a wide range of communication possibilities, both in real time and delayed (internal messaging, telephone answering service, email contact with the technical secretary, chat and videoconferences).

Likewise, this very complete Virtual Campus will allow TECH students to organize their study schedules according to their personal availability or work obligations. In this way, they will have global control of the academic content and teaching tools, based on their fast-paced professional update.



*The online study mode of this program will allow you to organize your time and learning pace, adapting it to your schedule”*

### The effectiveness of the method is justified by four fundamental achievements:

1. Students who follow this method not only achieve the assimilation of concepts, but also a development of their mental capacity, through exercises that assess real situations and the application of knowledge.
2. Learning is solidly translated into practical skills that allow the student to better integrate into the real world.
3. Ideas and concepts are understood more efficiently, given that the example situations are based on real-life.
4. Students like to feel that the effort they put into their studies is worthwhile. This then translates into a greater interest in learning and more time dedicated to working on the course.

### The university methodology top-rated by its students

The results of this innovative teaching model can be seen in the overall satisfaction levels of TECH graduates.

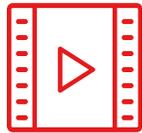
The students' assessment of the teaching quality, the quality of the materials, the structure of the program and its objectives is excellent. Not surprisingly, the institution became the top-rated university by its students according to the global score index, obtaining a 4.9 out of 5.

*Access the study contents from any device with an Internet connection (computer, tablet, smartphone) thanks to the fact that TECH is at the forefront of technology and teaching.*

*You will be able to learn with the advantages that come with having access to simulated learning environments and the learning by observation approach, that is, Learning from an expert.*



As such, the best educational materials, thoroughly prepared, will be available in this program:



#### 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.

This content is then adapted in an audiovisual format that will create our way of working online, with the latest techniques that allow us to offer you high quality in all of the material that we provide you with.



#### Practicing Skills and Abilities

You will carry out activities to develop specific competencies and skills in each thematic field. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop within the framework of the globalization we live in.



#### Interactive Summaries

We present the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

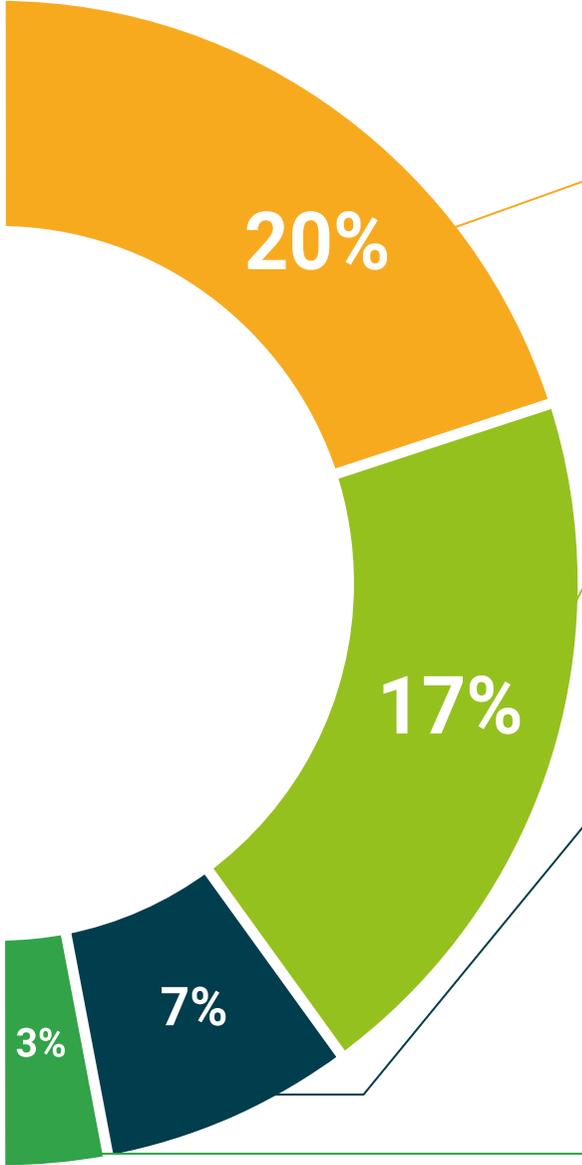
This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



#### Additional Reading

Recent articles, consensus documents, international guides... In our virtual library you will have access to everything you need to complete your education.





**Case Studies**

Students will complete a selection of the best case studies in the field. Cases that are presented, analyzed, and supervised by the best specialists in the world.



**Testing & Retesting**

We periodically assess and re-assess your knowledge throughout the program. We do this on 3 of the 4 levels of Miller's Pyramid.



**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 for future difficult decisions.



**Quick Action Guides**

TECH offers the most relevant contents of the course in the form of worksheets or quick action guides. A synthetic, practical and effective way to help students progress in their learning.



05

# Certificate

This Postgraduate Certificate in Programming in R guarantees students, in addition to the most rigorous and up-to-date education, access to a diploma for the Postgraduate Certificate issued by TECH Global University.



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

This private qualification will allow you to obtain a diploma for the **Postgraduate Certificate in Programming in R** endorsed by TECH Global University, the world's largest online university.

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

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

Title: **Postgraduate Certificate in Programming in R**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**



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

future  
health confidence people  
education information tutors  
guarantee accreditation teaching  
institutions technology learning  
community commitment  
personalized service innovation  
knowledge present quality  
development languages  
virtual classroom



## Postgraduate Certificate Programming in R

- › Modality: online
- › Duration: 6 weeks
- › Certificate: TECH Global University
- › Accreditation: 6 ECTS
- › Schedule: at your own pace

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