

Internship Program

Construction Materials and On-Site Quality Control



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Quality Control

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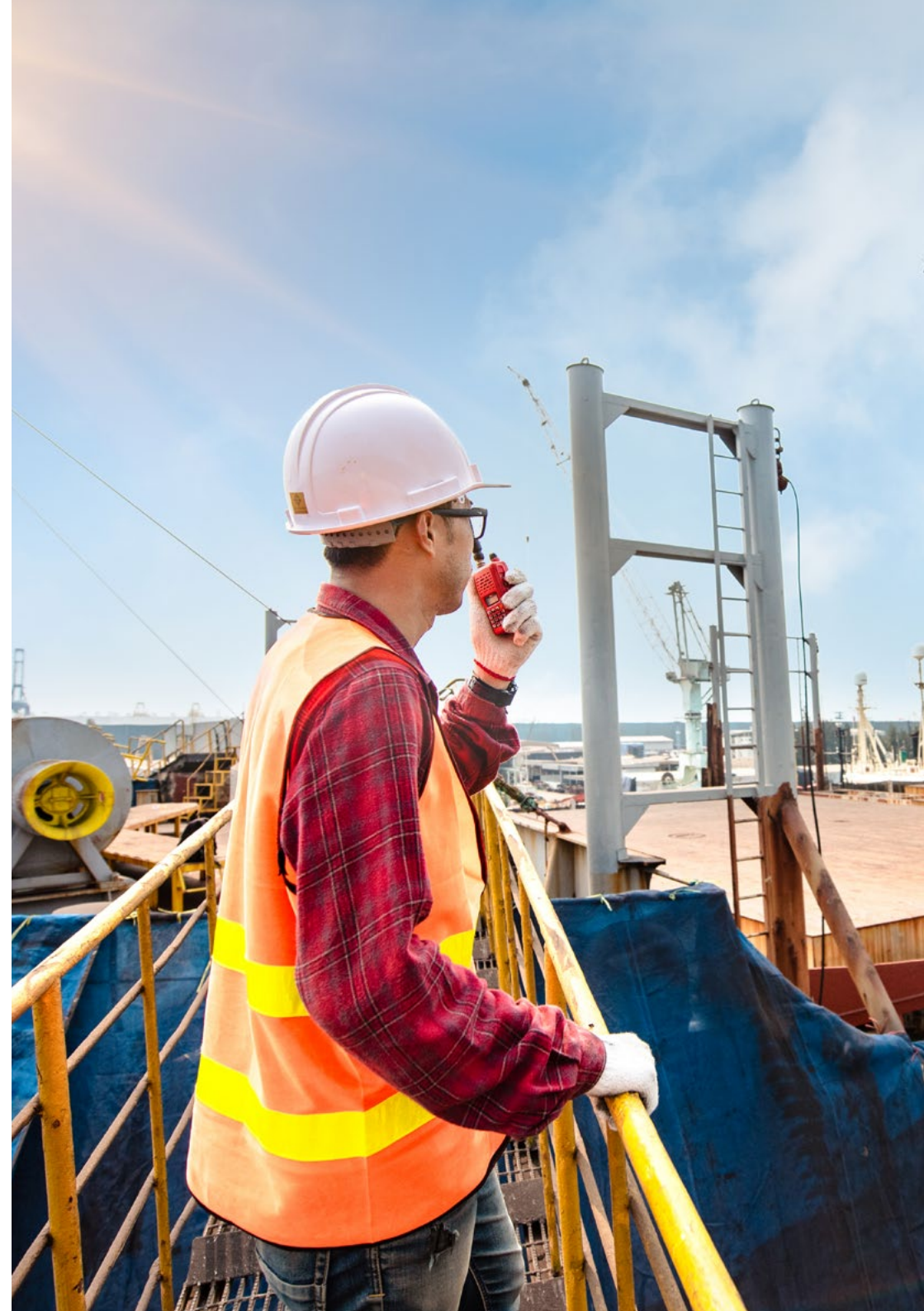
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01 Introduction

The construction industry faces significant challenges in terms of sustainability and structural performance, especially with increasing global urbanization. A report by the Organisation for Economic Co-operation and Development predicts that demand for durable, resource-efficient infrastructure will increase by 30% in the coming years. Therefore, engineers need to incorporate state-of-the-art Quality Control techniques into their practice to optimize the use of resources and the durability of structures. In view of this, TECH presents a qualification consisting of a practical stay of 3 weeks in a reference institution, where the professionals will be updated on the latest advances in this field.



Thanks to this revolutionary Internship Program, you will implement the most effective control systems during the execution of works, supervising compliance with specifications and regulations"





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In the construction industry, the proper selection of materials and Quality Control during the execution of works have become fundamental aspects to ensure the durability, safety and efficiency of the structures built. In this context, the application of new materials, together with innovative methods of quality control, play a fundamental role in the continuous improvement of construction standards. In this scenario, engineers must update their knowledge assiduously to implement in their procedures the most innovative Quality Control strategies to improve the efficiency of structures.

For this reason, TECH has created an innovative program with an eminently practical approach, which consists of a 120-hour stay in a reference entity in the field of Construction Materials and On-Site Quality Control. Therefore, during 3 weeks, the graduates will be part of a team of top level experts, with whom they will work actively in tasks such as the assessment of construction waste, microstructural characterization of materials or heuristic design of seismic-resistant structures. In this way, engineers will enjoy an efficient update that will help them to make a significant leap in quality in their professional careers.

Throughout this itinerary, students will have the support of an assistant tutor, who will be in charge of ensuring compliance with all the requirements for which this Internship Program has been designed. Thanks to this, graduates will work with total guarantee and security in the handling of the most sophisticated technology. Therefore, the graduates will live an enriching experience that will allow them to optimize their praxis.

02

Why Study an Internship Program?

The constant advance in materials technologies and quality control techniques is transforming the way in which structures are designed, built and maintained. Faced with this reality, companies are constantly demanding the incorporation of engineers highly specialized in Materials and Construction Quality Control. To make the most of these opportunities, professionals need to stay at the forefront of the most innovative techniques in this field. With this in mind, TECH has created a unique and disruptive academic product in today's educational landscape, which will allow graduates to enter an institution of reference in this area to delve into the latest innovations that have been produced.



You will design concrete mixes and select the most suitable materials to meet specific performance requirements in different construction applications"

1. Updating from the latest technology available

New technologies are having a significant impact in the field of Construction Materials and On-Site Quality Control by introducing tools that improve efficiency, accuracy and sustainability in projects. An example of this are the integrated sensors, which allow the creation of structures that can monitor their own condition and respond to environmental changes. For this reason, TECH is developing an Internship Program that will allow engineers to handle the most sophisticated technological tools for their professional practice.

2. Gaining in-depth knowledge from the experience of top specialists

During the course of this Internship Program, engineering professionals will be part of a renowned institution in the field of Construction Materials and On-Site Quality Control. There they will be supported by real professionals in this field, who will transmit to the graduates the knowledge they need to optimize their daily practice and improve their significant job prospects.

3. Entering first-class professional environments

TECH carries out a rigorous process to choose the centers available for their respective Internship Programs. Thanks to this, engineers will be guaranteed access to a prestigious entity in the field of Construction Materials and Quality Control in the Construction Site. In this way, the engineers will join a multidisciplinary work team made up of professionals with extensive experience in the sector.



4. Putting the acquired knowledge into daily practice from the very first moment

Currently, the academic market is full of university degrees that focus exclusively on the theoretical level. In response to this, TECH designs an innovative model of practical teaching, offering engineers the opportunity to immerse themselves in a real working environment for 3 weeks. As a result, graduates will develop advanced skills that will allow them to optimize their practice and make a leap in quality in their careers.

5. Expanding the boundaries of knowledge

TECH offers students the possibility of completing this Internship Program in internationally renowned institutions. In this way, engineers will be able to update both their knowledge and skills by working alongside outstanding professionals with vast experience in the field of Construction Materials and On-Site Quality Control.



*You will have full practical immersion
at the center of your choice"*

03 Objectives

Through this comprehensive Internship Program, engineers will acquire a comprehensive knowledge of the properties, behavior and applications of various construction materials. Likewise, professionals will master the most sophisticated laboratory techniques to perform tests and analysis of materials, including strength, durability or permeability tests. In this sense, graduates will handle modeling and simulation software to analyze structural behavior and predict the performance of materials and even construction systems.



General Objectives

- ◆ Perform an exhaustive analysis of the different types of construction materials
- ◆ Gain in-depth knowledge of the features of different construction materials
- ◆ Correct waste recovery
- ◆ Manage from an engineering point of view the quality and production of materials for the site
- ◆ Apply new techniques in making construction materials that are more environmentally friendly
- ◆ Raise awareness of new trends and materials applied to construction





Specific Objectives

- ♦ Know in detail the nature, characteristics and performance of special concretes, which have been investigated in recent years
- ♦ Develop and manufacture special concretes according to their dosage specifications and technological properties
- ♦ Analyze the concept of durability of the construction materials and their relationship with the concept of sustainability
- ♦ Identify the main causes of the alteration of construction materials
- ♦ Analyze the different materials that are involved in the construction and conservation of roads
- ♦ Delve into the different parts that make up roads, drainage, roadbeds, base layers and pavement layers, as well in as surface treatments
- ♦ Study the different metallic materials and their typologies
- ♦ Analyze the bending performance of steel and its regulations
- ♦ Gain in-depth knowledge of sustainable material, carbon footprint and life cycle, etc.
- ♦ Establish the classification of soils and their bearing capacity when using them in esplanades
- ♦ Know the different layers and the process of preparation and installation on site
- ♦ Define and characterize the different insulating building materials
- ♦ Know the main advantages of using innovative building materials from the point of view of energy saving and efficiency
- ♦ Analyze and evaluate advanced techniques for the characterization of building systems
- ♦ Analyze and understand how the characteristics of structures influence their behavior
- ♦ Give an in-depth breakdown of the various techniques and equipment used to chemically, mineralogically and petrophysically characterize a construction material
- ♦ Establish the basis for advanced materials characterization techniques, specifically optical scanning electron microscopy, scanning electron microscopy, transmission electron microscopy, x-ray diffraction, x-ray fluorescence, etc.
- ♦ Understand the principles of Quality Management Systems and their benefits in building
- ♦ Identify and understand errors in building, from technical to organizational and human aspects, as well as their consequences
- ♦ Analyze the causes of errors in building, addressing organizational, technical and human factors in order to implement preventive and corrective measures
- ♦ Become familiar with quality tools and their application in the building industry, including quality planning and management in building companies

04

Educational Plan

The Internship Program's Internship Program in Construction Materials and Quality Control consists of a 3-week practical internship in a prestigious institution, from Monday to Friday, with 8 consecutive hours of practical training with an assistant specialist. Throughout this period, the graduates will be able to work in a highly demanding work environment, joining a team of professionals who will show them the most recent advances in the field of Construction Materials and On-Site Quality Control.

In this program proposal, of a completely practical nature, the activities are aimed at developing and perfecting the skills necessary for the provision of Construction Materials and Quality Control services on site, which require a high level of qualification, and are oriented towards specific training for the exercise of the activity, in an environment of safety for workers and high professional performance.

This is an ideal opportunity for engineers to update their knowledge in this highly demanded field. In this way, experts will be able to incorporate into their practice the most avant-garde techniques for the implementation of effective quality systems that ensure compliance with technical specifications and regulations.

The practical education will be carried out with the active participation of the student performing the activities and procedures of each area of competence (learning to learn and learning to do), with the accompaniment and guidance of teachers and other training partners that facilitate teamwork and multidisciplinary integration as transversal competencies for the praxis in Construction Materials and On-Site Quality Control (learning to be and learning to relate).



The procedures described below will be the basis of the practical part of the program, and their implementation will be subject to the center's own availability and workload, the proposed activities being the following:

Module	Practical Activity
Cementitious Materials	Optimize concrete mixes using different types of cements and aggregates to meet strength, durability, and workability requirements
	Evaluate the use of alternative materials (such as fly ash, blast-furnace slag, or activated silica) for cement production
	Oversee quality control programs to ensure that cement meets required technical specifications
	Identify and resolve problems related to cement and concrete production (including strength, setting, or shrinkage difficulties)
Durability of Materials	Analyze the physical, chemical and mechanical properties of construction materials in order to know their suitability and durability in different environments and climatic conditions
	Select suitable materials based on durability, corrosion resistance and wear resistance criteria
	Develop concrete mixes that improve material strength under various loading conditions
	Design preventive maintenance programs to extend the life of structures through regular inspections, cleaning, and minor repairs
Metal Elements	Select optimal metal materials for specific construction applications (such as structural steel, aluminum, stainless steel, etc.)
	Execute laboratory tests to investigate the properties of metallic elements (tensile strength, hardness and fatigue strength)
	Investigate failures of metallic materials in structures to identify the underlying causes and propose improvements in design or component selection
	Perform periodic inspections to assess their condition and plan corrective maintenance activities
Construction Waste Management	Develop new processes for the valorization of construction waste, such as crushing of concrete for reuse as aggregate
	Provide technical advice to architects, engineers, and contractors on best practices for the management of construction waste
	Evaluate the environmental impact of management strategies and recommend measures to minimize negative impacts
	Participate in activities to raise public awareness of the importance of construction waste recovery for environmental sustainability



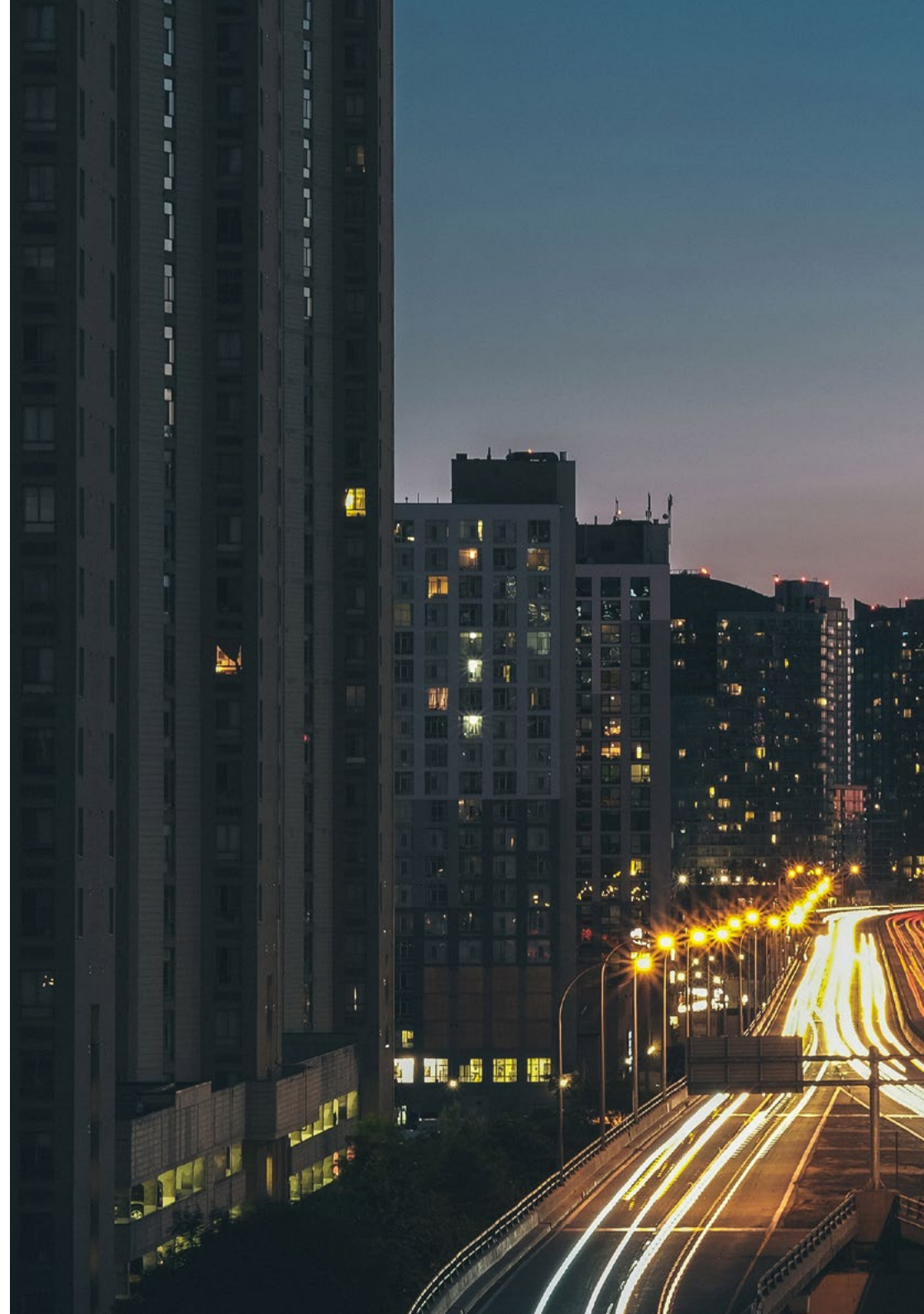
05

Where Can I Do the Internship Program?

In line with its priority of providing high quality programs, TECH carries out a thorough process to select the institutions where its students will carry out the Internship Programs. Thanks to this, graduates will have the opportunity to carry out a practical stay in institutions of international reference. In this way, the engineers will join a work team made up of professionals with extensive experience in Construction and On-Site Quality Control. Undoubtedly, a highly intense experience that will allow graduates to make a significant leap in quality in their careers.

“

You will carry out a practical stay in a recognized entity, where you will have the support of real professionals in Construction Materials and On-Site Quality Control”





Construction Materials and | 13 **tech** On-Site Quality Control

The student will be able to do this program at the following centers:



Engineering

Cones

Country
Spain

City
Madrid

Address: Calle Zinc, 3, Humanes de Madrid,
28970. Madrid

A prestigious construction company highly specialized in
quality control of materials and geotechnical studies.

Related internship programs:

- Geotechnics and Foundations
- Acoustic Engineering

06

General Conditions

Civil Liability Insurance

This institution's main concern is to guarantee the safety of the students and other collaborating agents involved in the internship process at the company. Among the measures dedicated to achieve this is the response to any incident that may occur during the entire teaching-learning process.

To this end, this entity commits to purchasing a civil liability insurance policy to cover any eventuality that may arise during the course of the internship at the center.

This liability policy for interns will have broad coverage and will be taken out prior to the start of the practical training period. That way professionals will not have to worry in case of having to face an unexpected situation and will be covered until the end of the internship program at the center.



General Conditions of the Internship Program

The general terms and conditions of the internship agreement for the program are as follows:

1. TUTOR: During the Internship Program, students will be assigned with two tutors who will accompany them throughout the process, answering any doubts and questions that may arise. On the one hand, there will be a professional tutor belonging to the internship center who will have the purpose of guiding and supporting the student at all times. On the other hand, they will also be assigned with an academic tutor, whose mission will be to coordinate and help the students during the whole process, solving doubts and facilitating everything they may need. In this way, the student will be accompanied and will be able to discuss any doubts that may arise, both clinical and academic.

2. DURATION: The internship program will have a duration of three continuous weeks, in 8-hour days, 5 days a week. The days of attendance and the schedule will be the responsibility of the center and the professional will be informed well in advance so that they can make the appropriate arrangements.

3. ABSENCE: If the students does not show up on the start date of the Internship Program, they will lose the right to it, without the possibility of reimbursement or change of dates. Absence for more than two days from the internship, without justification or a medical reason, will result in the professional's withdrawal from the internship, therefore, automatic termination of the internship. Any problems that may arise during the course of the internship must be urgently reported to the academic tutor.

4. CERTIFICATION: Professionals who pass the Internship Program will receive a certificate accrediting their stay at the center.

5. EMPLOYMENT RELATIONSHIP: The Internship Program shall not constitute an employment relationship of any kind.

6. PRIOR EDUCATION: Some centers may require a certificate of prior education for the Internship Program. In these cases, it will be necessary to submit it to the TECH internship department so that the assignment of the chosen center can be confirmed.

7. DOES NOT INCLUDE: The Internship Program will not include any element not described in the present conditions. Therefore, it does not include accommodation, transportation to the city where the internship takes place, visas or any other items not listed.

However, students may consult with their academic tutor for any questions or recommendations in this regard. The academic tutor will provide the student with all the necessary information to facilitate the procedures in any case.

07 Certificate

This private qualification will allow you to obtain an **Internship Program's diploma in Construction Materials and On-Site Quality Control** 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: **Internship Program in Construction Materials and On-Site Quality Control**

Duration: **3 weeks**

Attendance: **Monday to Friday, 8-hour consecutive shifts**

Accreditation: **4 ECTS**



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



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