Internship Program
Structural and Construction Engineering

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Internship Program

Structural and Construction Engineering

Index

01

Introduction

In the current context of rapid urban growth and global infrastructure development, Structural and Construction Engineering plays a key role in creating safe and sustainable environments. In this situation, new technologies are having a significant impact on the design of structural efficiency and resistance to natural disasters. In this scenario, it is essential for engineering professionals to keep abreast of innovations in materials, construction techniques and digital modeling to deliver world-class services. For this reason, TECH is launching an innovative program consisting of a 3-week practical internship at a benchmark institution, where professionals will delve into the latest advances in Structural and Construction Engineering.

> *Thanks to this Internship Program, you will perform detailed analyses of structural behavior under different loads and conditions"*

A recent World Bank report estimates that more than 60% of the world's population will live in urban areas in the coming years, which underlines the urgency of developing innovative and sustainable building infrastructures. In this context, structural engineers face numerous challenges to innovate and adapt to the changing demands of the environment. In order to overcome these obstacles, professionals must acquire skills to handle the most sophisticated technological tools to create safer, more efficient and sustainable infrastructures.

For this reason, TECH presents an innovative and eminently practical program consisting of a 120-hour stay in a reference entity in the field of Structural and Construction Engineering. In this way, during 3 weeks, the graduates will be part of a team of top level experts, with whom they will actively work on tasks such as the mechanics of deformable solids. Thanks to this, students will be able to update their knowledge while acquiring new skills to significantly optimize their practice.

In addition, during their stay, students will be supported by an assistant tutor, who will ensure that all the requirements for which this Internship Program was designed are met. On this basis, the graduates will work with total guarantee and security in the handling of the most sophisticated technology. Therefore, graduates will live an enriching experience that will allow them to experience a significant improvement in their professional performance.

02

Why Study an Internship Program?

With the significant growth of urban populations and the need to renovate existing infrastructure, companies are constantly seeking structural engineers capable of designing safe and efficient buildings. To make the most of these opportunities, professionals must acquire a competitive advantage that sets them apart from other candidates. The best way is to keep abreast of the most innovative techniques in this field, in order to develop highly creative and efficient construction projects. In this context, TECH has designed a unique and disruptive academic product in the current educational landscape, which will allow the specialist to enter a real working environment where to put into practice the latest procedures in Structural and Construction Engineering.

> *You will apply innovative technologies in the construction of structures, such as the use of structural modeling software and finite element analysis"*

1. Updating from the latest technology available

The advent of Industry 4.0 has had a huge impact on the field of Structural and Construction Engineering, providing technological tools that facilitate professionals in their various tasks. For example, the development of new materials with improved properties (such as ultra-high performance concretes) are enabling the construction of lighter, stronger and more durable structures. Aware of this, TECH is developing an Internship Program that will allow students to handle the most sophisticated technological tools for their professional practice.

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

Throughout this Internship Program, students will be integrated into a work team made up of the best professionals in Structural and Construction Engineering, which guarantees the excellent quality of the program. Thanks to the advice offered by the tutor who will accompany them during their on-site stay, the graduates will experience a remarkable leap in quality in their professional career.

3. Entering first-class professional environments

TECH carefully selects all the centers available for its Internship Programs. As a result, graduates are guaranteed access to a prestigious environment in the field of Structural and Construction Engineering. In this way, students will be able to see the day-to-day work of a demanding, rigorous and exhaustive area, always applying the latest scientific postulates in their work methodology.

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

In the academic market, there is a great lack of university programs that allow students to develop their knowledge in a practical way. Faced with this situation, TECH has created an innovative teaching model, which will enable students to access a real working environment for 3 weeks to expand their skills significantly.

5. Expanding the boundaries of knowledge

TECH offers engineers the opportunity to carry out this Internship Program in international reference entities. In this way, graduates will be able to update their knowledge together with cutting-edge professionals with extensive professional experience in the field of Structural and Construction Engineering.

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

03
Objectives

After completing this Internship Program, engineering professionals will have a holistic understanding of Structural and Construction Engineering. At the same time, graduates will develop advanced skills to manage construction projects from planning to execution. In this sense, engineers will integrate sustainability principles into the design and construction of structures. In this way, experts will minimize environmental impacts and maximize energy efficiency.

General Objectives

- Learn in an autonomous way new knowledge and techniques suitable for Civil Engineering
- Know in detail the nature, characteristics and performance of new construction materials that have been investigated in recent years
- Understand and use the language of engineering, as well as the terminology of Civil Engineering
- Delve in a scientific and technical way in the exercise of the profession of Technical Engineer of Public Works with knowledge of the functions of consultancy, analysis, design, calculation, project, construction, maintenance, conservation and operation

Specific Objectives

- Apply all the latest knowledge and techniques for the execution of contracts, following all relevant administrative processes
- Develop maritime works, taking into account the peculiarities of each construction and the latest trends in R+D+i
- Understand the general concepts of Fluid Physics and solve related problems
- Know the basic characteristics of fluids and their behavior under various conditions
- Analyze and understand how the characteristics of structures influence their behavior
- Apply knowledge of the resistant performance of structures in order to dimension them according to existing standards and using analytical and numerical calculation methods
- Establish a sensitivity analysis of the behavior of the foundations in the evolution of this type of loads
- Identify the different types of improvement of foundations already in use, classifying them according to the type of foundation, the soil on which it is located and the age at which it was built
- Delve into the science of concrete: Fresh and hardened state. Characteristics in the fresh state, mechanical properties in the hardened state, stress-strain behavior, modulus of deformation and Poisson's ratio, creep, fracture, dimensional stability, retraction
- Analyze the most important characteristics of special concretes, of the different existing typologies, whether with fibers, light, self-compacting, etc.

- Understand the fundamentals of structural engineering and solid deformation, including basic concepts and laws of motion
- Master the relationships between stresses and external forces, as well as tools such as Mohr's circle for their analysis
- Acquire a thorough knowledge of the different types of existing land treatments
- Analyze the range of existing typologies and their correspondence with the improvement of the different properties
- Understand the characteristics of steel as a structural material and its historical and modern applications
- Master the basic principles of design and construction of steel structures, including the interpretation of specifications and building codes
- Know the design bases, including actions, material characteristics and design criteria to ensure the durability of structures
- Master the structural analysis of reinforced concrete structures, considering analysis models, prestressing effects and in-service section calculations
- Specialize for the application of the necessary legislation during the exercise of the profession of Technical Engineer of Public Works

- Understand the design, calculation, construction and maintenance of building works in terms of structure, finishes, installations and equipment.
- Know the appropriate machinery and construction processes for gravity and pressure piping works
- Access to the special parts available on the market for application in pipeline works

A revolutionary program that will equip you with the resources you need to overcome challenges in the field of Structural and Construction Engineering"

04
Educational Plan

The Internship Program of this university program in Structural and Construction Engineering consists of a 3-week internship in a prestigious organization, from Monday to Friday, with 8 consecutive hours of practical training with an assistant specialist. Throughout this course, graduates will be able to work in a highly demanding work environment, joining a team of professionals who will transmit the latest advances in this field.

In this proposal, of a completely practical nature, the activities are aimed at developing and perfecting the skills necessary for the provision of Structural and Construction Engineering services, and are oriented towards specific training for the exercise of the activity.

This is an ideal opportunity for engineering professionals to broaden their knowledge while working in a sector of great potential, which requires continuous updating in order to offer high quality services.

The practical teaching 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 practice of the course.

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:

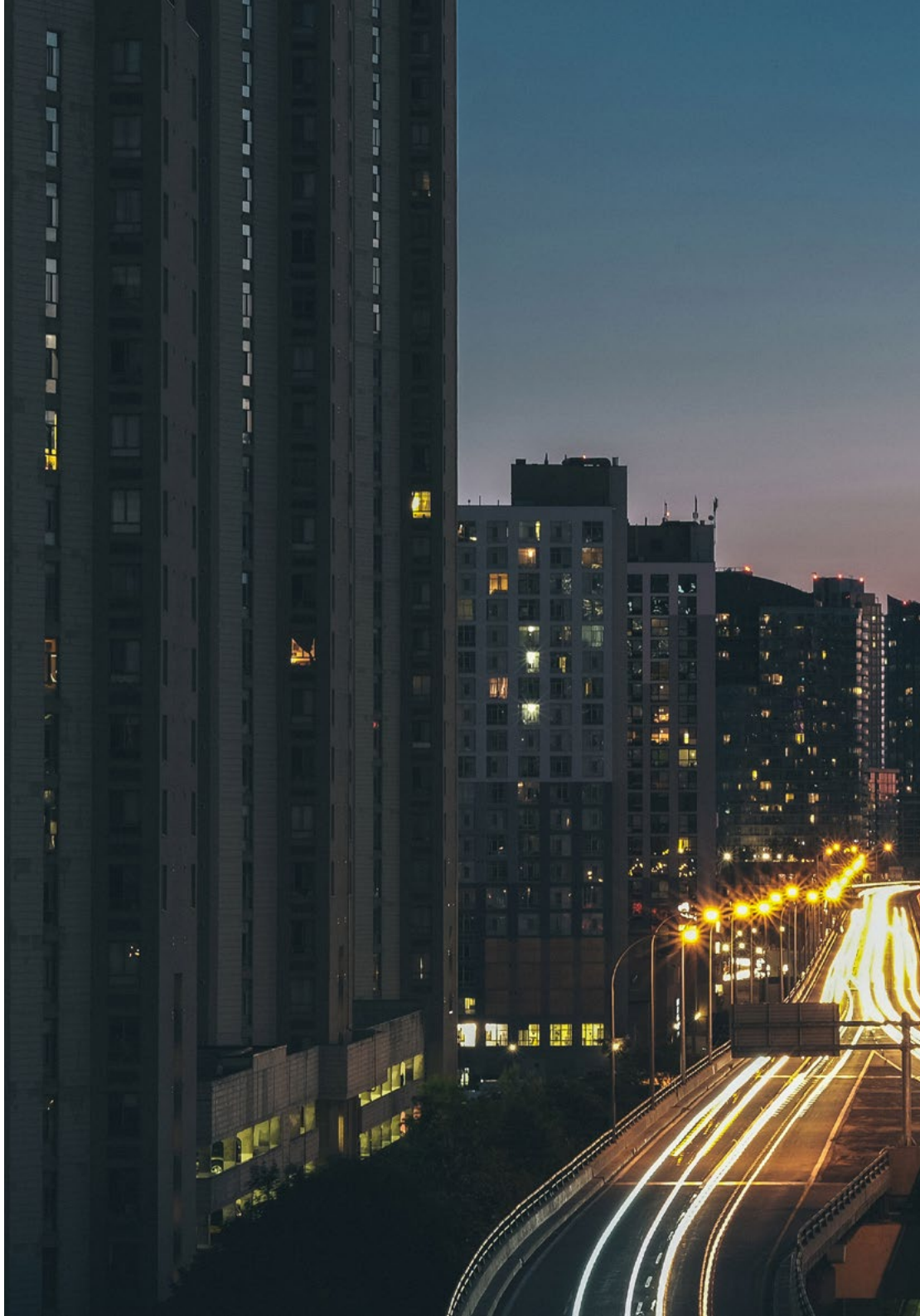
Module	Practical Activity
Fluid Dynamics and Hydraulics	Design systems for the transport and control of fluids, such as water distribution networks or pumping systems
	Evaluate the efficiency and performance of existing systems, identifying areas for improvement and optimization
	Manage simulation tools to predict the behavior of fluids in different situations and conditions
	Ensure quality assurance in the fabrication of hydraulic systems installation, ensuring compliance with standards and regulations
Structural Evaluation	Analyze the behavior of the structure under different conditions to determine deformations and vibration effects
	Determine the loads acting on the structure, considering factors such as self-weight, live loads dead loads, and environmental loads
	Propose modifications to the structural design with the objective of improving efficiency and minimizing the use of materials
	Design connections between structural elements to ensure adequate transfer of loads
Soil Mechanics and Foundations	Build adequate foundations for structures that must support specific loads and soil conditions
	Study the stability of natural or excavated slopes to design solutions to prevent landslides
	Conduct detailed investigations of soil behavior under loading to determine relevant geotechnical properties
	Implement geotechnical instrumentation data to monitor soil and structural behavior
Behavior of Solids under Loading	Calculate structures to resist static and dynamic loading
	Use modeling software to simulate the behavior of structures under different loading conditions and optimize their design
	Select structural materials for specific applications, considering mechanical properties such as strength, stiffness and durability
	Supervise the fabrication, erection and installation of structures to ensure compliance with quality standards

05

Where Can I Do the Internship Program?

In its firm commitment to offer high quality academic programs, TECH carefully selects all available institutions for the Internship Program of its students. This meticulous process has allowed the selection of internationally recognized companies, ensuring that the engineers carry out their on-site stay in a first class environment. Therefore, you will have the opportunity to be part of a multidisciplinary work team, composed of true experts in Structural and Construction Engineering.

You will carry out your practical stay in a prestigious entity, where you will have the support of the best professionals in Structural and Construction Engineering"



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

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

Make the most of this opportunity to surround yourself with expert professionals and learn from their work methodology"

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 **Internship Program in Structural and Construction Engineering** contains the most complete and up-to-date program in the professional and academic landscape.

After the student has passed the assessments, they will receive their corresponding Internship Program diploma issued by **TECH Technological University** via tracked delivery*.

The diploma issued by TECH will reflect the grade obtained in the test.

Title: **Internship Program in Structural and Construction Engineering**

Duration: **3 weeks**

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


tech technological university

Awards the following

DIPLOMA

to

Mr./Ms. _____, with identification number _____.

For having successfully passed and accredited the following program

INTERNSHIP PROGRAM

in

Structural and Construction Engineering

This is a qualification awarded by this University, with a duration of 120 hours, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH is a Private Institution of Higher Education recognized by the Ministry of Public Education as of June 28, 2018.

June 17, 2020

Tere Guevara Navarro

Dean

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

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Internship Program

Structural and Construction Engineering

Internship Program
Structural and Construction Engineering

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