

Postgraduate Diploma Environmental Engineering





Postgraduate Diploma Environmental Engineering

- » Modality: online
- » Duration: 6 months
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

Website: www.techtitute.com/in/engineering/postgraduate-diploma/postgraduate-diploma-environmental-engineering

Index

01

Introduction

p. 4

02

Objectives

p. 8

03

Structure and Content

p. 12

04

Methodology

p. 18

05

Certificate

p. 26

01

Introduction

The scarcity of natural resources, the search for new alternative ways to generate energy and the reduction of polluting waste are the three axes around which the new challenges of Environmental Engineering are articulated. These challenges are taken up by companies in different sectors and are reinforced by an increasingly environmentally conscious society. A scenario where the engineering professional is in high demand, thanks to his or her knowledge focused, especially, on the preservation and care of the environment. This is why this academic institution has designed a program where the graduate will be able to acquire the most advanced learning about the technical and administrative elements in the organization and creation of projects, as well as the auditing process and all the requirements that are demandable to the companies. All this will be much easier thanks to the innovative multimedia content provided by this 100% online academic program.





“

This program will give you a boost to your profession and will strengthen your skills in project management in Environmental Engineering. Enroll now”

Ecological buildings, the use of photovoltaic energy, less polluting transport and environmentally friendly construction are the new approach to today's engineering projects. The "green" concept is spreading, driven by a population that is more aware of the importance of caring for the environment and by the policies of different countries that seek to reduce the impact of all sectors on nature. In this scenario, the engineer is in great demand by companies seeking highly qualified profiles with advanced knowledge of environmental engineering.

The great scientific advances made in recent years in this field, as well as the multidisciplinary nature of these engineers, give great value to this specialty, which is currently experiencing a great boom. For this reason, TECH has designed this Postgraduate Diploma, where the graduate will be able to obtain the most relevant information in this field, the essential requirements for the elaboration, planning and implementation of projects, as well as the current ISO regulations.

This will be possible thanks to the most comprehensive content developed by specialists in this field and multimedia resources that will facilitate the acquisition of knowledge. Furthermore, students can use the Relearning method, based on the repetition of content, which will also allow them to reduce the long hours of study.

An excellent opportunity to pursue a university degree conveniently when and where you want. Students will only need an electronic device with an Internet connection to access the program's syllabus. Content, the teaching load of which you are free to distribute according to your needs. according to your needs. The professional is, therefore, offered an education that is at the academic forefront and compatible with the most demanding responsibilities.

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

- ◆ The development of case studies presented by experts of Environmental Engineering
- ◆ The graphic, schematic, and practical contents with which they are created, provide scientific and practical information on the 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



It stands out in a sector that demands engineers committed to the environment and with an advanced knowledge of environmental quality"

“

Join the challenge of sustainability from Environmental Engineering. Enroll now in this Postgraduate Diploma and advance in your professional career”

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

The multimedia content, developed with the latest educational technology, will provide professionals with situated and contextual learning, i.e., a simulated environment that will provide immersive training, designed for training oneself 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 academic year. For this purpose, the student will be assisted by an innovative interactive video system created by renowned and experienced experts.

Access 24 hours a day, easily from your computer or tablet to the library of resources offered by this Postgraduate Diploma.

You will acquire the necessary knowledge to be able to implement engineering projects that care for the environment.



02 Objectives

Companies in all economic sectors require professional engineers to advise, analyze and contribute new ideas to their projects. All this, taking into account the environmental impact. It is for this reason that this university degree will provide students with the basics of Environmental Engineering, being able, at the end of this program, to identify the elements, parts and phases of a project, and master the various tools related to environmental audits. Resources such as video summaries, detailed videos or specialized readings are available 24 hours a day.



“

Do you want to advance your career as an Environmental Engineer? Enroll in this Postgraduate Diploma and bring the most effective solutions to companies in the industrial sector”



General Objectives

- ◆ Adequately use the technical vocabulary within the scientific bases of the natural environment
- ◆ Initiate the engineering design of some simple physical, chemical and biological systems
- ◆ Approach the use of environmental and sustainability indicators as a tool to evaluate the state of a system
- ◆ Use bibliographic and electronic information critically and work correctly in and outside the classroom and in the laboratory



You will be able to analyze and solve any environmental problem in the company thanks to the information provided by this Postgraduate Diploma”





Specific Objectives

Module 1. Principles of Environmental Engineering

- ◆ Proper use and identification of balance sheets as a method for system analysis
- ◆ Define and evaluate the necessary energy involved in a process, either for the transport of materials or for the modification of the state of a current
- ◆ Know how to use the methodologies to select an operation to separate materials or compounds in two-phase and three-phase systems
- ◆ Initiate treatment of contaminants for the recovery of aqueous streams

Module 2. Project Organization and Management

- ◆ Identify the elements, parts and phases of an environmental project
- ◆ Elaborate project documents, as well as other complementary documentation
- ◆ Apply activity planning and scheduling techniques
- ◆ Apply technical and administrative aspects of the different phases of projects

Module 3. Environmental Auditing

- ◆ Know the different tools related to environmental auditing
- ◆ Identify the auditing tools necessary for the resolution of the problems that arise
- ◆ Express in precise terms the problem to be solved
- ◆ Interpret the result of the problem from the point of view of Environmental Auditing

03

Structure and Content

The syllabus of this Postgraduate Diploma has been developed to provide students with the latest information in the field of Environmental Engineering. Theoretical knowledge, to which you will have access at any time of the day, is complemented by case studies, which will give a more practical approach and direct application in the creation of projects in this field. Students will also be able to deepen their knowledge of auditing processes or of the most commonly used IT tools in the sector for the development of actions and the elaboration of actions taking into account the different phases and costs of projects.



“

This program provides you with the most current knowledge on Environmental Engineering and the software you need to keep an adequate control of all the phases of your projects”

Module 1. Principles of Environmental Engineering

- 1.1. Principles of Environmental Engineering
 - 1.1.1. Introduction
 - 1.1.2. Basic Concepts
 - 1.1.3. Magnitudes
 - 1.1.4. Magnitudes and Measurement
- 1.2. Basic Operations and Facilities of Environmental Interest
 - 1.2.1. Introduction
 - 1.2.2. Water Treatment
 - 1.2.3. Basic Operations of Water Treatment
 - 1.2.4. Gas Treatment
 - 1.2.5. Soil Treatment
- 1.3. Global Balance Sheet of Matter and Energy
 - 1.3.1. Introduction and Concept of a Balance Sheet
 - 1.3.2. Global Balance Sheet of Matter and Energy
 - 1.3.3. General Expressions in a Balance Sheet
 - 1.3.4. Transaction Balance Sheet
 - 1.3.5. Work Method
 - 1.3.6. Enthalpy Changes
- 1.4. Transport Phenomena
 - 1.4.1. Introduction
 - 1.4.2. Definition of Transport Phenomena
 - 1.4.3. General Expressions
 - 1.4.4. Balance Sheets in Single-Phase Systems
 - 1.4.5. Balance Sheets in Single-Phase Laminar Flow Systems
 - 1.4.6. Balance Sheets in Single-Phase Turbulent Flow Systems
 - 1.4.7. Matter Transfer in a Single Phase Without Convective Motion
 - 1.4.8. Transport Phenomena in Two-Phase Systems
 - 1.4.9. Friction
- 1.5. Fluid Current Energy Balance Sheet
 - 1.5.1. Balance Sheet on a Moving Fluid Current
 - 1.5.2. Incompressible Fluids
 - 1.5.3. Compressible Fluids
- 1.6. Heat Transport
 - 1.6.1. Introduction
 - 1.6.2. Conduction
 - 1.6.3. Convection
 - 1.6.4. Radiation
 - 1.6.5. Emission and Absorption of Energy by the Earth
- 1.7. Sedimentation Operations
 - 1.7.1. Introduction
 - 1.7.2. Sedimentation Rate
 - 1.7.3. Design of a Sedimentation Tank
 - 1.7.4. Colloids and Flocs
 - 1.7.5. Delayed Sedimentation
 - 1.7.6. Environmental Applications
- 1.8. Adsorption
 - 1.8.1. Introduction
 - 1.8.2. Physical Adsorption
 - 1.8.3. Design
- 1.9. Adsorption
 - 1.9.1. Introduction
 - 1.9.2. Adsorbents
 - 1.9.3. Equilibrium Adsorption
 - 1.9.4. Adsorption Dynamics
 - 1.9.5. Adsorption in River Beds
 - 1.9.6. Design
- 1.10. Chemical and Biological Reactors
 - 1.10.1. Biological Processes in Sewage Water
 - 1.10.2. Bacterial Microorganisms
 - 1.10.3. Chemical Treatments
 - 1.10.4. Bacterial Growth
 - 1.10.5. Anaerobic Digestion

Module 2. Project Organization and Management

- 2.1. Classical Project Theory
 - 2.1.1. Traditional Concept of Project
 - 2.1.2. The Preliminary Project
 - 2.1.3. The Project
 - 2.1.4. Project Documentation
 - 2.1.5. Entities Involved in the Project
 - 2.1.6. Types of Projects
- 2.2. Modern Project Management
 - 2.2.1. General concepts
 - 2.2.2. Multidimensional Approach
 - 2.2.3. Project Phases and Milestones
 - 2.2.4. Process Model
- 2.3. Initial Project Phases
 - 2.3.1. Detection of Opportunities
 - 2.3.2. Project Selection Criteria
 - 2.3.3. Preparation and Submission of Bids
 - 2.3.4. Feasibility Studies
 - 2.3.5. Cost Estimation
 - 2.3.6. Disaggregated Project Structure
 - 2.3.7. Project Technology
 - 2.3.8. Definition and Objectives (scope): the Project Plan
- 2.4. Human Resources in the Project
 - 2.4.1. Organization of the Project in the Company
 - 2.4.2. Project Manager and Project Team
 - 2.4.3. Motivation: time management, meetings
 - 2.4.4. Consulting and Engineering Companies
- 2.5. Time, Cost and Resource Planning
 - 2.5.1. Elements of Scheduling and Planning
 - 2.5.2. PMBOK Schedule Management
 - 2.5.3. Cost Management PMBOK
 - 2.5.4. Scheduling Tools (Gantt, CPM, PERT)
 - 2.5.5. Resource Optimization
 - 2.5.6. Use of the free Software Application
- 2.6. The Contracting and Procurement Process
 - 2.6.1. Contract Management
 - 2.6.2. Contract Specifications
 - 2.6.3. Legal Clauses
 - 2.6.4. Change and Revision Mechanisms
 - 2.6.5. Procurement Management (PMBOK)
 - 2.6.6. The Purchasing Cycle
 - 2.6.7. The Public Administration Contracts Law BORRAR
- 2.7. Project Quality Management
 - 2.7.1. Introduction to Quality
 - 2.7.2. Regulations Related to Quality
 - 2.7.3. Quality System in the Company
 - 2.7.4. Quality in Project Management
- 2.8. Project Risk Management
 - 2.8.1. Introduction to Risk Management
 - 2.8.2. Risk Management Models
 - 2.8.3. Risk Management Processes
- 2.9. Project Communications Management
 - 2.9.1. Introduction to Communications Management(PMBOK)
 - 2.9.2. Communications Management
 - 2.9.2.1. Identify Stakeholders
 - 2.9.2.2. Planning Communication
 - 2.9.2.3. Information Distribution
 - 2.9.2.4. Stakeholder Expectation Management
 - 2.9.2.5. Performance Reporting
- 2.10. Control of the Execution and Closure of the Project
 - 2.10.1. Project Administration and ControlProject Administration. and Control
 - 2.10.2. Integrated Control of Deadlines and Costs (Earned Value Method)
 - 2.10.3. Project Closing

Module 3. Environmental Auditing

- 3.1. Introduction to ISO-14001
 - 3.1.1. What Is ISO 14001?
 - 3.1.2. ISO 14001 14001 Model
 - 3.1.3. Description of ISO 14000 Standards
- 3.2. Audits of Environmental Management Systems
 - 3.2.1. The Audit Process
 - 3.2.2. The Audit Process
 - 3.2.3. General Principles of Environmental Auditing
 - 3.2.4. General Principles of Environmental Auditing
 - 3.2.5. Elements of an Auditing Protocol
 - 3.2.6. EMS Audits and Compliance Audits: Relationship
- 3.3. Responsibilities in an EMS Audit
 - 3.3.1. Auditor's Responsibilities
 - 3.3.2. Responsibility of the Auditee
 - 3.3.3. Breach of responsibilities: Legal Effects
- 3.4. Guidance for Planning and Conducting an Internal EMS Audit
 - 3.4.1. EMS Internal Audit Program and Procedures
 - 3.4.2. Conducting an Internal EMS Audit
 - 3.4.3. Objectives and Instructions
 - 3.4.4. Environmental Management Program
 - 3.4.5. Structure and Responsibility: Training, Knowledge and Competence
 - 3.4.6. Communication: SGM documentation
 - 3.4.7. Documentary Control: Control of Operations
 - 3.4.8. Emergency Preparation and Response
 - 3.4.9. Monitoring and Measurement: Non-conformity, Preventive and Corrective Action
 - 3.4.10. Records. MGS Audit: Management Review Exercises



- 3.5. Development of Registration Audit
 - 3.5.1. Process: Maintenance, Recorder
 - 3.5.2. Preparation of the Registration Audit: Self-Declaration
- 3.6. Value of ISO 14001
 - 3.6.1. Benefits of Implementing ISO 14001 in a Company
 - 3.6.2. Benefits of a Company's Registration to ISO 14001
 - 3.6.3. Continuous Improvement Activities
- 3.7. Keys to the Correct Implementation of an EMS Audit Program
 - 3.7.1. Necessary Elements of an Effective and Efficient Audit Program

“ *A program designed to provide you with the most advanced knowledge on environmental auditing and the benefits of the implementation of ISO 14001”*



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 is the most widely used learning system in the best faculties in the world. 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 program, the studies 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 8 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 Environmental Engineering guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Diploma issued by TECH Technological University.



“

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

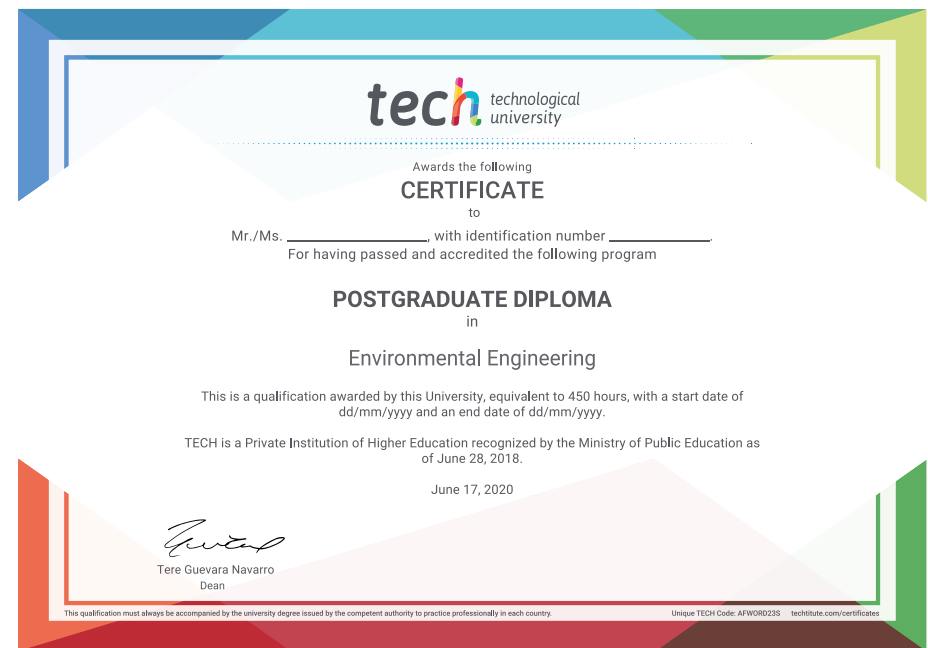
This **Postgraduate Diploma in Environment Engineering** contains the most complete and up-to-date program on the market.

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

The certificate issued by **TECH Technological University** will reflect the qualification obtained in the Postgraduate Diploma, and meets the requirements commonly demanded by labor exchanges, competitive examinations, and professional career evaluation committees.

Title: **Postgraduate Diploma in Environmental Engineering**

Official N° of Hours: **450 h.**



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



Postgraduate Diploma Environmental Engineering

- » Modality: **online**
- » Duration: **6 months**
- » Certificate: **TECH Technological University**
- » Dedication: **16h/week**
- » Schedule: **at your own pace**
- » Exams: **online**

Postgraduate Diploma Environmental Engineering

