



**60 ECTS Credits**

**12 months**

**Online**

# **Master's Degree in Quality, Environment and Safety in Construction Settings**



**UCAM**  
UNIVERSIDAD  
CATÓLICA DE MURCIA



**Structuralia**

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## STRUCTURALIA

Structuralia is an online school specialized in graduate engineering, infrastructure, construction, energy, building, new technologies, and digital transformation programs and courses. We are dedicated to providing high-quality education for engineers, architects, and STEM (science, technology, engineering, and mathematics) professionals.

Since our creation in 2001, over 200,000 students from more than 90 countries have participated in our virtual classrooms as we disseminate knowledge and guide professionals toward success.

To this effect, we collaborate with leading international experts in each field, which enables our students to specialize under the guidance of active professionals. Our constant interaction with major companies in each sector, as their specialized training provider, enables us to tailor high-quality academic material to meet the current job requirements of our students.

Our master's programs are certified by our partner universities, such as the Universidad Católica San Antonio de Murcia, UDAVINCI, or Universidad Isabel I.

Every day we strive to provide the best training for engineers, architects, and STEM professionals with a clear goal: your professional success.

### BRIEF OVERVIEW

Quality, environment, safety, and health are basic business management elements that ensure all regulatory and contract requirements are met adequately. They are also essential efficiency, client satisfaction and loyalty tools.

This Master's degree is designed to provide an ample view of all these concepts and a deep understanding of their application in design and implementation.

The program has been developed by highly experienced professionals to facilitate the acquisition of the necessary capabilities to establish and manage quality, environment, safety and health systems. It also aims at contributing to business strategic finance, HHRR, social, natural and reputation objectives.

### CAREER OPPORTUNITIES

This Master's degree facilitates the access to career opportunities such as Quality/Environment/Safety/Health Coordinators/Directors in construction, promotion, engineering, and architecture companies.

It also contributes to strengthening capabilities related to these areas for positions such as operations director.

Other positions this program can contribute to include Technical, Corporate, Sustainability and HHRR Directors, and Organization Coordinators/Directors/Officers.

### OBJECTIVES

The overall objective is for the student to develop adequate Quality, Environment and Health and Safety strategies, as well as to lead and coordinate teams comprehensively for the company to meet its goals. It also seeks to improve customer satisfaction, environmental management and workers' safety and health to enhance their performance.

Additionally, the program aims to facilitate the access to knowledge and the development of skills to obtain management system certifications that allow businesses to: participate in project tenders, resume business relationships with former clients, improve efficiency for higher competitiveness, and guarantee project sustainability.

This overall objective will be achieved through the following specific objectives:

Understand Quality, Environment, Health and Safety contexts, and their business applications to lead improvement strategies.

Implement, maintain and certify Quality, Environment and Health and Safety management in the company and thus, achieve objectives systematically.

Prepare and apply quality, environment, health, and safety plans the company's control and improvement activities.

To integrate management systems in order to optimize processes and resources.

To understand building and infrastructure sustainability assessment tool requirements and know how to respond to them in order to achieve optimum results in client certification processes.

To know the relationship between, and the contribution of quality, environment, health, and safety to corporate social responsibility as a support, and to align strategies.

## PROGRAM

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### 1. QUALITY MANAGEMENT. QUALITY ASSURANCE

#### Unit 1: Quality principles

- SESSION 1: Introduction.
- SESSION 2: Quality policy
- SESSION 3: Context analysis development.
- SESSION 4: Processes and procedures
- SESSION 5: Risk identification

#### Unit 2: Quality Management System

- SESSION 1: Responsibility definition and objectives
- SESSION 2: Plans and program definition
- SESSION 3: HHRR management
- SESSION 4: Material resource management
- SESSION 5: External resource management (Suppliers)
- SESSION 6: External resource management (Procurement)

#### Unit 3: Quality-related activities

- SESSION 1: Information management.
- SESSION 2: Communication management
- SESSION 3: Design, product and service planning
- SESSION 4: Design, product and service control

#### Unit 4: Quality monitoring and measurement

- SESSION 1: Nonconformity management and corrective measures
- SESSION 2: Internal control mechanisms: Reporting
- SESSION 3: Control mechanisms: Auditing
- SESSION 4: Management review
- SESSION 5: External certification

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### 2. QUALITY CONTROL IN PROJECT DESIGN AND IMPLEMENTATION

#### Unit 1: Risks, the planning process, and Introduction to quality planning in construction projects

- Introduction
- Risk and opportunities in construction projects
- Project design and development quality control
- Construction project quality planning

### Unit 2: Detailed quality planning and its application during project implementation

- Implementation resource organization
- Specification, methods, and template development
- Procurement control
- Supplier and outsourcing control
- Construction project monitoring and evaluation

### Unit 3: Part I: Building and urban development quality and water treatment

- Quality in urban development and urban construction projects
- Quality control in residential construction projects
- Quality control for non-residential social buildings
- Quality control for non-residential industrial buildings
- Quality control in the construction of water treatment facilities

### Unit 4: Quality control in construction works

- Dam quality control
- Roads and airport quality control
- Railway quality control
- Quality control in port and offshore construction works
- Quality control in crossing construction works: Bridges, crossings, etc.
- Quality control in crossing construction works: Tunnels

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## 3. ENVIRONMENTAL MANAGEMENT IN CONSTRUCTION PROJECTS

### Unit 1: Introduction of the environmental management system in construction projects

- Introduction to environmental management
- Relation with other standards and management systems
- Environmental management system periods
- Context analysis
- EMS scope: Processes and other requirements

### Unit 2: Governance and planning of an environmental management system in construction projects

- Leadership, environmental policies and roles
- Planification: Environmental aspects
- Planification: Legal and other requirements
- Planification: Risks (threats and opportunities)
- Planification of environmental actions and objectives

### Unit 3: Support and operation processes in environmental management system

- Support: Resource management
- Support: Management of the documented information
- Support: Environmental communication management
- Operation: Environmental management in productive activities
- Operation: Environmental management plan and its implementation

### Unit 4: Performance evaluation and improvement of environmental management system. External certification

- Performance evaluation: Follow-up, measurement, analysis and measurement activities
- Performance evaluation: Internal audit
- Performance evaluation: Management review
- Improvement activities: Non-conformities and corrective actions
- External certification

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## 4. ENVIRONMENTAL CONTROL AT A CONSTRUCTION SITE

### Unit 1: Environmental management basics in construction projects

- Legal environmental requirements. Permits and licenses
- EIA (Environmental Impact Assessment) procedures and application in construction projects
- Industrial plants in construction projects
- ISO 14001 environmental management systems and application in construction projects
- Environmental follow-up of a construction work (environmental surveillance)
- Training for, and awareness among construction workers

### Unit 2: Environmental impact preventive measures in construction projects I (Various)

- Noise and dust prevention
- Vegetation and wildlife protection
- Cultural heritage protection
- Essentials for environmental restoration
- Energy efficiency in construction projects

### Unit 3: Environmental impact preventive measures in construction projects II (Water and soil)

- Actions on river basins and sensitive environments. Impact prevention
- Water treatment (Sewage and Industrial) in construction projects
- Run-off and erosion prevention during construction works
- Soil protection. Machinery maintenance in construction works
- Fuel tanks and other hazardous substances in construction sites



### Unit 4: Waste management

- Construction and Demolition Waste (CDW) management in construction projects
- Hazardous Waste Management (and other types of waste)
- Land valuation and CDW in construction projects
- Environmental emergencies in construction projects

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## 5. HEALTH AND SAFETY CONTROL AT A CONSTRUCTION SITE

### Unit 1: Introduction to occupational risk prevention: Safety at work I

- Introduction
- Safety conditions in the construction sector
- Risk evaluation: Methodologies
- Site implementation. Hygiene and welfare facilities
- Safety: Risk of falling to the same or different levels

### Unit 2: Safety at work II.

- Safety: work with chemical agents
- Safety: Work with electrical risks
- Safety: Work with explosives
- Safety: Fire hazard
- Safety: Machine and plant work

### Unit 3: Safety at work III. Industrial hygiene, ergonomics and psychosociology

- Safety: Work in confined spaces. Work in explosive atmospheres. Work in hyperbaric environments
- Safety: Work with portable aids and tools
- Industrial hygiene: Physical and biological risks
- Ergonomic risks
- Psychosocial risks

### Unit 4: Occupational risk prevention management

- Accident investigation
- Occupational health
- Safety management in design
- Safety management on-site
- Safety management in maintenance and operation

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## 6. HEALTH AND SAFETY MANAGEMENT

### Unit 1: ISO 45001 – Basic concepts

- Introduction
- Definition of processes
- Development of the context analysis
- Leadership and commitment. OSH policies
- Roles, responsibilities and authorities in the organization. Consultation and participation of workers

### Unit 2: Planning and communication

- Planning I. Actions to address risks and opportunities
- Planning II. Actions to address risks and opportunities. OSH objectives and planning to achieve OSH objectives
- Support I. Resources. Competencies. Awareness
- Support II. Communication
- Support III. Documented information

### Unit 3: Operational control

- Operation. Planning and operational control I. Elimination of hazards and reduction of risks for OSH
- Operation. Planning and operational control II. Change management
- Operation. Planning and operational control III. Purchases
- Operation. Emergency preparedness and response
- Performance evaluation I. Performance monitoring, measurement, analysis and evaluation

### UNIT 4: Continual improvement

- Performance evaluation II. Internal audit
- Performance evaluation III. Management review
- Improvement I. Incidents, non-conformities and corrective actions
- Improvement II. Continual improvement
- External certification

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## 7. QUALITY, ENVIRONMENT, SAFETY AND HEALTH MANAGEMENT SYSTEMS. ISO 9001, ISO 14001, ISO 45001

### Unit 1: Introduction to the Integrated Construction Management System (IMS)

- Introduction to integrated management
- Reasons for integration
- Strategies, models and levels in Integrated Management Systems
- Standard – based Integration for IMS (Integrated Management System)
- The UNE 66177:2005 standard

### Unit 2: Government and planning of an Integrated Management System in construction

- Integration planning according to UNE 66177:2005
- Understanding the organisation its context and scope
- Processes and other activities in the IMS
- Leadership: policies, roles and responsibilities
- Planning: Environmental aspects, hazards and risk assessments and requirements

### Unit 3: Risks, objectives, and support processes. Operational planning

- Planning: risks, opportunities and actions
- Planning: objectives and planned changes
- Support: IMS resources
- Support: awareness, communication and documented information
- Operation: operational planning and control. Emergency situations

### Unit 4: Performance assessment and improvement in a iMS

- Quality in operations
- Performance assessment: Monitoring, measurement, analysis and evaluation
- Performance assessment: Internal audit
- Performance assessment: Management review
- Continuous improvement: Incidents, non-conformities and corrective actions

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## 8. SUSTAINABLE CONSTRUCTION

### Unit 1 Introduction to sustainable construction

- Introduction and historical context
- Regulations on sustainability in building
- Sustainability regulations in civil works
- Building materials and the environment
- Life cycle analysis

### Unit 2 Environmental certification of buildings

- Measurement of sustainability in buildings
- Credits associated with the construction company
- Measurement of sustainability in buildings 2
- Breeam credits associated with the construction company
- Valuation of the use of sustainable materials in leed and breeam

## Unit 3 Other building and civil works certifications

- Measurement of sustainability in buildings 3: green
- Green credits associated with the construction company
- Health and comfort measures in the work environment. well certification
- Energy efficiency measures in buildings. passivhaus certification
- Sustainability measures in civil works

## Unit 4 Environmental certification infrastructures. Envision

- Introduction to envision
- Envision credits associated with quality of life and leadership
- Envision credits associated with resource allocation
- Envision credits associated with natural world
- Envision credits associated with climate and resilience

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## 9. BUSINESS SOCIAL RESPONSIBILITY

UNIT 1: RSE (Business Social Responsibility) / CSR (Corporate Social Responsibility). A new business management approach

- From Sustainability to CSR
- CSR ethical framework. Concepts
- CSR global context. Standards and international declarations
- Sustainable Development Goals (SDG) from a business perspective
- CSR in Spain

### UNIT 2: CSR interest groups and dimensions – Part 1

- Interest group analysis
- CSR management areas and benefits for the company
- Transparency and corporate governance
- CSR and people management
- Business and human rights

### UNIT 3: CSR dimensions – Part 2

- Supply chain
- Environment
- Sustainable finance
- Collaboration with the community
- Responsible consumption

### UNIT 4: Management and communication tools

- CSR management tools
- CSR main management systems
- Risk management and CSR
- Communication in CSR. Keys to good strategies
- CSR communication tools

### MASTER'S FINAL PROJECT

*The program is subject to possible variations / updates of the contents to improve their quality*

### AUTHOR PROFILE

#### ACADEMIC DIRECTOR

##### MIGUEL ÁNGEL FAJARDO MANSILLA

Miguel is an Industrial Engineer, with a master's degree in Engineering and Environmental Management, as well as one in Energy Business and Operations Management. He has worked in a leading company within the sector in the implementation and maintenance of integrated quality, environment, safety, and health management systems. He has also participated in numerous system audits throughout his professional career.

**Sonia Moreno Angulo** Forest engineer from Polytechnic University of Madrid (UPM); PDD (Project Planning and Design) from the School For Industrial Organisation (EOI); Master's degree in Engineering and Environmental Management from the School For Industrial Organisation (EOI); Master's degree in Trainer of Trainers (ToT) from Barcelona Autonomous University (UAB); Customer Service Expert from the Spanish Quality Association (AEC).

Sonia started her work experience in Quality and Environmental Management and Construction Project Control at the OHL Group, where she worked for 18 years. She is currently working as Partner Manager at Huella Responsable and as Corporate Social Responsibility, Environment and Quality Consultant.

**Gonzalo Oliveros García** is a forest engineer with experience in environmental management in the construction sector. During the past 10 years, Gonzalo has been working with nuclear energy quality assurance as Chief Auditor in charge of auditing critical suppliers for nuclear plant security. He continues to hold this position, which provides him with a continuous learning experience.

Besides his qualifications in the area of quality, he is also a member of the Codes and Standards Committee at the American Society of Mechanical Engineers (ASME) with active participation in the improvement of quality standards at nuclear facilities NQA-1.

**Juan José Rosado** holds a Bachelor's degree in Biology with a specialty in Biochemistry from Madrid Autonomous University (UAM); He also holds an expert diploma on Engineering and Environmental Management from the Industrial Organization Institute (EOI), as well as a Specialist diploma in Territorial Planning and Environment from Valencia Autonomous University (UPV).

Juan José Rosado has over 30 years of experience in environmental management in the construction sector, as well as an environment lecturer in different Spanish universities. He has also been working as the Environmental Service Manager at one of the main construction companies in Spain with significant international projection since 2000.

**Alfonso Cortés Pérez** holds a PhD in Construction Advanced Techniques from European University; a Master's degree in Civil Engineering Advanced Experimental Techniques from Polytechnic University of Madrid (UPM); a Master's degree in Labor Risk Prevention from Universidad San Pablo-CEU; Civil engineering from Extremadura University.

He has more than 20 years of professional experience in the engineering and construction sectors, and extensive teaching experience in the field of labor risk prevention in different public and private universities. He is currently a faculty member at the Isabel I University for Master's degree in Labor Risk Prevention. Alfonso is the founder and director of AC2 Systems Consultancy, which is specialized in the design and implementation of occupational hazards prevention management models according to the ISO 45001; and of AC2 Innovation, which is specialized in research and technological innovation of BIM Methodology applied to engineering and construction processes.

**Manuel Macías Miranda** holds a PhD in Physics; professor at the Technical Architecture School from the Madrid Autonomous University (UAM); member of the Building Energy Certification Advisory Committee from the Ministry of Industry; Innovation and technology Development Director at GBCe LEED RT group (VERDE Building Council Spain); Technical Director at iiSBE (International Initiative for a Sustainable Built Environment); and President of IBPSA (International Building Performance Simulation Association) in Spain.

Manuel is a founding member of GBCe and developer of the VERDE building sustainability assessment tool. He is also a member of the CTN 198 and CEN-TC350 Standardization Committees on sustainable construction and ISO / TC 59 / SC 17, that has developed the sustainability standard package for construction projects. He is also a member of the Spanish Energy Certification Advisory Committee from the Ministry of Industry.

**Ana García Ana** is a Master Architect from Polytechnic University of Madrid (UPM) and Munich Technical University. Ana works as a professor at the Port, Canal and Road Technical Engineering School from Polytechnic University of Madrid (UPM). She is a member of LEED International Round table and has contributed to LEED's development in Europe. She also has experience as a sustainability consultant for certification management of several LEED and VERDE buildings, as well as for different BREEAM certifications. Ana has worked as coordinator of the technical group at the VI Passivhaus Spanish Conference, and has collaborated with the technology innovation and development group GBCe in the development of de GBCe's materials platform. She is also a member of the scientific committee at MAT-COAM. In 2016, she created the Architectural VERDE Method, which contributes to the incorporation of sustainable practices in the construction sector through consultancy and training.

Ana has worked in Madrid, Germany and Paraguay, and has more than 15 years of experience in different fields of architecture, from project proposal writing, to the implementation of sustainable construction practices, passive architecture, energy efficiency, NEZB, efficiency in the use of water and energy certification. She is strongly committed with sustainability awareness, and has collaborated with associations such as VERDE Building Council Spain, Passivhaus Building Platform, COAM, Sustainability and Architecture Association





## Master's Degree in Quality, Environment and Safety in Construction Settings

**Sonia Gómez** holds an MBA from Madrid Autonomous University (UAM); a Master's degree in Marketing Management and a graduate degree on Online Marketing and Digital Strategy from the Business School and Higher Education Center (ESIC); CSR Expert University diploma from the National Distance Education University (UNED). Sonia is a marketing and communication professional with more than 18 years of experience in renewable energies and the industrial sector, and with NGOs in the areas of marketing and communication. She currently works as a consultant for Social Responsibility, Communication and Marketing in projects with social and / or environmental involvement, and is a managing partner of the firm Huella Responsable, which is specialized in corporate social responsibility, environment, and quality services

### METHODOLOGY

At Structuralia, we apply a modern methodology adapted to the process of change we live in today. Our educational environment is based on an online learning system, that is, learning by observing, reflecting, and practicing with an organized and carefully programmed study pace, which comes along with the constant support from our team. Our learning solution is designed to facilitate learning at the student's own pace, with a uniform structure that includes continuous evaluations and practical exercises to reinforce knowledge.

Our program's calendar consists of 9 monthly modules, which are divided into 4 weekly teaching units. In addition, there are 3 months for the Master's Final Project (MFP). This structure may be adjusted depending on the innate complexities of the program.

Each of these units contain introductory videos on concepts, syllabus prepared by our experts (which can be viewed online or downloaded in PDF), and self-assessments. Some units may even have practical exercises or examples, if required by the expert. At the end of each module, there will be a compulsory exam in order to complete the module.

The Director will ask all students to complete a Master's project, in which they will apply everything they have learnt in the previous modules, to practical cases. Students will have 3 months to complete and submit the project, during which they will receive the support from the program's team.

Finally, you will receive the status reports from our team through regular follow-ups throughout the program.

### EVALUATION

The assessment will be ongoing throughout the training program and will take into account not only the acquisition of knowledge, but also the development of skills and attitudes.

At the end of each monthly module, the student must answer a test-type exam on the online training platform, in addition to pose a variety of practical cases along the topics and optional unit test so as to achieve the maximum consolidation of technical concepts.

To obtain the degree it will be necessary to pass the assessable modules of the program.

### DEGREE

Students who have visualized all the lessons, successfully passed the self-assessments and exams, and submitted the master's final project, will receive Structuralia's certificate and the title of Master of Professional Development by the Universidad Católica San Antonio de Murcia (UCAM), in digital format.

Likewise, the student can request a certificate of completion of his/her master's degree, or a certificate of completion from Structuralia.

The student may also request a the Hague Apostille on his/her certificate of completion from the university an additional fee.



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