



MASTER'S DEGREE IN ADVANCED DISASTER RISK MANAGEMENT



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 SUMMARY

The new era of change in which we live and the consequences that these changes bring with them and with the environment are the focus of study for this master's degree. The numerous updates to legislation and changes in regulations are advancing at a fast pace. Adapting to these changes is the key to success for both private companies and public administrations. With this master's degree you will have all the necessary tools to manage the risks derived from the different processes and adapt to the regulations in order to be able to manage future projects, diagnoses, evaluations or technical studies. This master's degree effectively brings together the knowledge necessary to integrate highly qualified professionals into the labour market in sustainable development management, risk management, and to respond to the impacts and damages that derive from incorrect management and lack of prevention, preparation and planning.

WHO IS IT INTENDED FOR?

This degree is designed for profiles oriented towards conservation, ecosystem restoration, biological and environmental research branches, environmental science graduates, biology graduates, biodiversity-oriented studies, ecology, geology, territorial studies, geophysics, marine and oceanic sciences. Technical profiles with qualifications and vocation towards environmental sustainability, forestry engineering, forestry engineering, agricultural engineers, agronomists and environmental engineering graduates. Professionals with political-social and anthropogenic qualifications.

JOB OPPORTUNITIES

- Disaster risk management, environment, climate change and sustainability directorate
- Disaster risk management, environment, climate change and sustainability manager
- Disaster Risk Management, Environment, Climate Change and Sustainability consultant
- Project manager disaster risk management, environment, climate change and sustainability
- Disaster risk management, environment, climate change and sustainability technician
- Consultant for climate change verification
- Environmental educator
- Consultant for International R&D&I Project
- Research personnel

GOALS

- Address the scope and dimensions of disaster risk management tools.
- Address the current version of climate change and emergency.
- Identify regions of action and strategy for biodiversity 2030.
- Master potential risk management mechanisms and response instruments.
- Deepen the analysis of climate change impacts, mitigation and adaptation of resources.

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PROGRAM

MODULE I: DISASTER AND EMERGENCY

Unidad 1: Risk analysis

- Risk profiles. Threats. Exposition. Vulnerability.
- Types of risk according to their origin.
- Processes that generate risk. Global factors and underlying factors.
- Risk analysis and assessment with a comprehensive approach.
- Disaster risk and its effect on global poverty.

Unidad 2: Disaster and emergency. Different perspectives

- Seismic impacts.
- Hydrometeorological impacts.
- Resilience in the framework of disaster risk management.
- Response to emergencies I.
- Response to emergencies II.

Unidad 3: Integral management of disaster risk

- Global warming and the ozone layer.
- Extreme weather events.
- Emerging pollutants.
- Deforestation and loss of biodiversity.
- Freshwater and ocean acidification.

Unidad 4: International institutionality and disaster risk management

- Climate emergency and associated risks.
- IPCC scenarios.
- Context in the Framework of Climate Change.
- Sendai Framework for Disaster Risk Reduction 2015-2030.
- Commitment of the countries.

MODULE II: RISK AND DISASTER MANAGEMENT IN BIOGEOGRAPHIC REGIONS

Unidad 1: Biogeographical regions northern hemisphere and tropics

- Basic notions of biogeography, Neotropical Region.
- Palearctic Region.
- Nearctic Region.
- Afrotropical Region.
- Natural disasters in the biogeographic regions of the northern hemisphere and tropics.

Unidad 2: Southern hemisphere and oceans biogeographical regions

- Australian Region.
- Eastern Region.
- Antarctic Region.
- Oceanic Region.
- Natural disasters in the biogeographic regions of the southern hemisphere and oceans.

Unidad 3: Strategies for biodiversity. reintegration of nature

- Ecological bases on biodiversity.
- Affectation of biodiversity.
- Climate change: Towards the future.
- Risk Management derived from climate change.
- Policy and management mechanisms for climate and land use.

Unidad 4: Ecosystem services and conservation mechanisms

- Ecosystem services.
- Mechanisms for the evaluation of ecosystem services.
- Conservation and restoration of ecosystems.
- Initiatives for the protection of ecosystem services.
- Risks and threats of climate change in protected natural spaces.

MODULE III: LAND PLANNING AND DISASTER RISK MANAGEMENT ASSOCIATED WITH EARLY WARNING IDENTIFICATION

Unit 1: Basic concepts of land planning associated with risk management

- Definition Territory
- Land use planning
- Territorial development planning
- Notions of Threat, vulnerability and risk
- Considerations for incorporating threats, vulnerabilities and risks in territorial planning

Unit 2: Risk, emergency and disaster: different perspectives

- Differential considerations between emergency, risk and disaster.
- Emergency response strategies and actions
- Types of risks according to their origin
- Risk Governance
- Disaster as a categorizing event

Unit 3: Risk analysis and evaluation with an integral approach

- Triggering and conditioning factors of Threats of natural, socio-natural and anthropic origin.
- Vulnerability and its physical, environmental, educational, cultural, political, institutional and social dimensions.
- Methodological approaches to determine risk scenarios.
- Risk assessment methodology with a territorial approach
- Disaster risk and its effect on global poverty

Unit 4: Disaster risk management from land planning

- Sendai Framework for Disaster Risk Reduction 2015-2030
- Criteria to align disaster risk reduction strategies with the Sendai Framework
- Incorporation of risk assessment and management in territorial planning instruments
- Advantages and limits of incorporating the concept of resilience in disaster risk management in territorial planning.
- General notions of territorial planning for maps related to natural hazards.

MODULE IV: CARBON CYCLE AND NEUTRALITY

Unit 1: Carbon cycle and main emission sources

- The history of humanity is the history of Carbon
- Air pollution. sources and dynamics
- Air pollution. Global warming
- Air pollution. trend lines
- Air pollution. political measures

Unit 2: Importance of ecosystems in carbon sequencing and storage

- Carbon cycle and main emission sources
- The role of ecosystems
- Response of ecosystems to the increase in emissions
- Loss of Carbon sinks
- Current trend of green infrastructure and oceans in carbon sequestration

Unit 3: Green taxation

- Green economy today
- Factors that affect green taxation to the current economy
- Carbon neutrality through clean technologies
- Carbon neutrality through carbon offset strategies

- Adaptation of the economy to green taxation models

Unit 4: Social resilience in the face of global warming and prospects for the future

- Consumption alternatives to achieve carbon neutrality
- Carbon neutrality in production systems
- Innovation and research lines
- Ecological transition.
- Towards carbon neutrality in 2050

MODULE V: GEOSPATIAL TECHNOLOGIES. DATA PROCESSING IN DISASTER RISK MANAGEMENT

Unit 1: Application of gis and geospatial technologies

- GIS in disaster risk management
- Geospatial technologies in disaster risk management
- Remote Sensing in Natural Hazard Assessments
- Acquisition of satellite data, combination of bands and interpretation of images
- Enhancement of the interpretation of geospatial data

Unit 2: Methodological criteria for the preparation of maps of natural hazards

- Methodology for the preparation of hazard maps
- Methodology for the preparation and analysis of risk maps
- Maps of natural risks and their relationship with territorial planning
- Study and management of thematic data
- Options and selection of solutions based on the study of data

Unit 3: Modeling threats

- Modeling of flood phenomena
- Modeling of mass removal phenomena
- Modeling of torrential flood phenomena
- Modeling of fire phenomena
- Management and analysis of technological risk

Unit 4: Land planning

- Territorial planning figures
- Land use planning decision-making with risk management inputs
- Vulnerability analysis in land use planning
- Risk analysis in territorial planning
- Land use regulations (Case studies)

MODULE VI: GEOPOLITICS. ENVIRONMENTAL EDUCATION

Unit 1: Key tools for the fight against climate change

- Sustainability reporting methodologies
- Geopolitical tools in disaster risk management
- Geopolitical tools in adaptation to climate change
- Early and current environmental education
- Towards decarbonization

Unit 2: Science-based targets initiative

- Origin of the initiative and its implementation
- Benefits of applying science-based targets
- Conditions of application of the objectives based on science
- Process of presenting scientific objectives
- Update of scientific objectives

Unit 3: Registry of pollutant emissions and transfers

- Global Record of emissions of polluting substances
- European Register of emissions of polluting substances
- State records of emissions of polluting substances
- Analysis and treatment of data
- Future lines in data processing

Unit 4: Impacts on society

- Impacts derived from climate change in economic sectors
- Impacts derived from climate change in the services sector
- Impacts related to the supply and distribution of gas
- Impacts on the primary and secondary sectors
- Impacts on the pillars of society

MODULE VII: CITIES AND ENERGY. SUSTAINABLE TRANSFORMATION OF ECONOMIC SECTORS

Unit 1. Current cities and their transformation

- Cities at present. Resource consumption
- Residential sector
- Industrial sector. Tertiary sector
- Critical and essential infrastructure
- Architecture and the use of renewable energies

Unit 2: Sustainable transport

- Transport status
- Communications and public transport
- Renewable energy in transport
- Legislation and its adaptation
- Other forms of communication. Air and water

Unit 3: Transformation of the industrial sector. energy consumption and generation

- Sector transformation
- Transformation in resource use. Innovation and research
- Energy generation
- Technology integration. IoT. Intelligent buildings.
- Legislation and its adaptation

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Unit 4: Transformation of the industrial sector. Water treatment and natural resources

- Water and health
- Water transport and treatment
- Sustainable water use
- Marine energy
- Legislation and its adaptation

MODULE VIII: WASTE MANAGEMENT AND QUALITY, ENVIRONMENT AND CIRCULARITY MANAGEMENT SYSTEMS

Unit 1: Quality and environmental management

- Requirements of a Quality and Environmental Management System
- Context of organization, leadership and planning
- Risk assessment and Analysis of Failure Modes and Effects (FMEA)
- Support and operation tools
- Documented information for a Quality and Environmental Management system

Unit 2: Internal and external audits

- The importance of audits
- Audit Team
- Audit Planning
- Gathering evidence and findings
- Reporting

Unit 3: Industrial waste management

- Challenges in industrial waste management.
- Regions and applicable regulations.
- Waste storing
- Waste treatment
- Waste prevention.

Unit 4: Zero residue achieved

- Benefits of a circular economy.
- Zero Waste Considerations
- Control and traceability
- Minimization plan and improvement strategies.
- Certifications

MODULE IX: CLIMATE CHANGES IN THE NEXT DECADES

Unit 1: Climate change. Historical context

- Known Climate Change.
- Geological time, ecological time.
- Causes of Climate Change, Global warming and greenhouse gasses.
- Terrestrial ecosystems. Loss and destruction.
- Marine ecosystems. Loss and destruction.

Unit 2: Climate change. Current global context

- Effects of Climate Change and its trajectory.
- Global overpopulation.
- Mass extinctions on Earth and their effect on the population.
- Melting of the Poles Poles. Rise and acidification of the oceans.
- Extreme natural phenomena and their effect on the population.

Unit 3: International policies in the context of climate change

- Global climate change policy structures.
- United Nations Framework Convention on Climate Change Initiatives
- The Kyoto Protocol
- The Paris Agreement
- Progress on the Climate Change Climate change negotiating tracks. The role of different states.

Unit 4: Adaptation and mitigation

- Citizenship and climate change.
- Theory of Climate Change as a threat.
- Mechanisms for assessing vulnerability to Climate Change.
- Adaptation to Climate Change. Mechanisms and initiatives.
- Climate Change mitigation. Mechanisms and initiatives.

MODULE X: MASTER'S FINAL PROJECT

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

AUTHOR PROFILE

DIRECTOR – Ana Belén Peña Serrano

Technical Engineering in Land Survey from the Polytechnic University of Madrid. Master in Renewable Energies from the San Pablo CEU University. Master in rehabilitation and Energy Saving in building. Geological Cartography by the National University of Distance Education.

She completes her training with courses on different topics, highlighting the environment and the energy efficiency of buildings. Her experience covers various sectors from work in civil construction to people management in the field of human resources. Content editor on renewable energy and energy efficiency in magazines and on the technical sector websites.

She collaborates in different scientific communication projects, directing disclosure in different media on engineering and environmental matter. Content creator in different academic institutions. She coordinates the directions of four Master's degrees in digital universities and teaches several affiliated programs. Currently, she is part of the engineering team of the group Quetzal Ingeniería.

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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