Structuralia
Engineering eLearning

UNIVERSIDAD
NEBRIJA

Master´s Degree in Artificial Intelligence and Big Data + 60 ECTS Credits





Choose to learn at school
leader in online training

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ABOUT STRUCTURALIA

Structuralia is an online educational institution offering highly specialized postgraduate programs in engineering, infrastructure, construction, energy, building, digital transformation, and new technologies. Since our founding in 2001, we have been committed to providing quality training for the professional development of **engineers, architects, and STEM professionals.**

We provide a platform where you can acquire new skills and enhance your knowledge without being limited by time or location. Our methodology ensures an engaging, interactive, and **supportive educational experience,** equipping our students to meet future challenges in their respective fields of work.

More than **20** years of experience

Over **200k** student have learnt with us

More than **90** nationalities among our students



Specialize to
advance your career

STRUCTURALIA ALLIANCE AND NEBRIJA UNIVERSITY

Structuralia and the University of Nebrija successfully consolidate a strategic partnership. Thus, the collaboration between Structuralia and the University of Nebrija promotes a collaborative, innovative and accessible approach towards learning that is adapted to the individual needs of students.

The two institutions prioritize practical and flexible learning, adapted to the demands of today's working world, and which promotes the personal and professional development of each student. The purpose is to acquire new knowledge in a dynamic and didactic way, which facilitates its retention and contributes to developing the necessary skills to be ready to take part in a society in constant and rapid transformation.

Structuralia and the University of Nebrija have set as their main objective the democratization of education to bring it to even the most remote areas and taking advantage of the latest technological innovations. In addition, they have a team of highly specialized teachers and learning platforms that incorporate cutting-edge educational technology to provide academic support throughout the entire educational process.



STRUCTURALIA RANKINGS

Structuralia has achieved the recognition of different national and international rankings, thanks to its commitment to **democratize education** and bet on educational innovation to **achieve excellence.**

For the elaboration of these rankings, **indicators** such as online and offline reputation, the quality of the institution, social responsibility, educational innovation or the profile of professionals are used.















QS, seal of academic excellence

Structuralia: 5 stars in online education

BY EDUCA EDTECH

Structuralia is a brand endorsed by **EDUCA EDTECH Group,** which is composed of a group of experienced and recognized **educational institutions of online training.** All the entities that make it up share the mission of **democratizing access to education** and are committed to knowledge transfer, technological development and research.

EDUCA EDTECH Group

ONLINE EDUCATION

EUROINNOVA INTERNATIONAL ONLINE EDUCATION

inesem business school

INEAF BUSINESS SCHOOL

red educa.net

inesalud

EDU SPORT

EDUCA business school

ESIBE ESCUELA IBEROAMERICANA DE POSTGRADO

Educa.Pro

ceupe European Business School

UDAVINCI

CAPMAN testing solutions

Structuralia Engineering eLearning

UNIMIAMI International University of Miami

Educa PHAROS

LXP METHODOLOGY

The **EDUCA LXP** methodology enhances the learning experience by incorporating AI into e-learning processes. It utilizes highly customized predictive models based on the analysis of student interactions with their virtual environments.

EDUCA LXP is the outcome of **Research Results Transfer** from multiple interdisciplinary R&D+i projects, involving international universities dedicated to knowledge transfer, technological development and research.



1. Flexibility

100% online and flexible learning, allowing students to study where, when and how they want.



2. Accessibility

We believe in making education accessible to all, working to ensure that everyone has the opportunity to continue their learning journey.



3. Personalization

We offer customized learning paths tailored to each student's unique needs and preferences.



4. Accompaniment / Academic mentoring

Guidance and support. Our team of expert teachers provides academic guidance, advocating for educational quality and adapting to the needs of the ever-changing labor market.



5. Innovation

We are at the forefront of technological development, constantly evolving with AI-driven Learning Experience Platforms.



6. Educational excellence

Our didactic approach focuses on competence based learning, promoting practical and meaningful learning experiences to ensure professional development.



Programs

Our own university and official programs

WHY CHOOSIG STRUCTURALIA

1. Our Experience

- ✓ More than **20 years of experience**.
- ✓ More than **200.000 students** have already learnt in our virtual classrooms.
- ✓ More than **90 nationalities** among our student body.

2. Our Team

Currently, Structuralia has a team of **more than 550 professionals working in the STEM (Science, Technology, Engineering and Mathematics)**. Our staff is solidly framed in a structure that facilitates the highest quality in the attention to students.

3. Our Methodology



100% ONLINE

Study at your convenience, wherever you are. Access our virtual campus from any device.



LEARNING

We strive for a deep integration of new knowledge into your cognitive framework.



TEAM TEACHERS

Structuralia has a team of professionals to elevate your study experience with topquality education.



NOT BE ALONE

Receive continuous guidance from our tutoring team throughout your student journey.

4. AENOR Quality

- ✓ We are Collaboration Agency Nº99000000169 authorized by the Ministry of Employment and Social Security.
- ✓ Annual external audits are carried out to ensure the highest quality by AENOR.
- ✓ Our teaching processes are certified by AENOR under ISO 9001.

Master´s Degree in Artificial Intelligence and Big Data + 60 ECTS Credits

LENGHT
1500 horas

MODE
ONLINE

ASSISTANCE
PERSONALIZED

CREDIT
60 ECTS

Certificacion

Master´s Degree in Artificial Intelligence and Big Data with 60 ECTS Credits awarded by the Antonio de Nebrija University. Teaching not leading to an officially accredited qualification



Description

Big Data is defined as the process of collecting large heterogeneous amounts of data for analysis (sometimes in real time). This data set is so large and complex that traditional processing means are ineffective, hence, the new forms and computer applications capable of managing and processing all this amount of data must be developed. Big Data was born as a response to these challenges, and above all, so that through data analysis, we may be able to attract more customers, avoid losing them, and improve our operational processes. This program aims at guiding students in their understanding of the technologies behind Big Data and Artificial Intelligence. As a matter of fact, Artificial Intelligence applied to the real world requires extraordinary vision, and this course intends to show the path to understanding the technology, its applications, and the execution of advanced AI project management models.

Goals

The overall objective of this program is to guide the student towards developing a new technological profile and acquiring the management and software project development skills necessary in this changing world. The global objective consist of the following specific objectives: - Understand what Big Data is, why talk about Big Data, what it is for and the technological elements that support the concept. - Understand intelligent systems capable of responding to current demands. - Know and design the architecture behind Big Data and Artificial Intelligence - Develop ideation and management methodologies for AI projects - Identify the factors that convert an AI solution into a viable project.

What does it prepare you for?

This master is aimed at profiles that are dedicated to information technologies, data analysts, managers and executives who want to acquire this skill, and students who have completed their university degree and want to increase their preparation and specialize it.

Who is the target audience?

The following master's degree will prepare you to manage and analyze the business data provided to you, as well as to be able to make strategic and operational decisions based on these data processing results. Know the different tools to perform this management and design advanced solutions.

Job opportunities

A Big Data + AI expert is capable of managing areas such as marketing, as well as the data team, and the analytics team, in addition to being able to lead a data-based transformation of the company. The job opportunities can be classified within the following groups: · Digital Marketing Specialist: In

marketing, the application of Artificial Intelligence is key to analyzing markets and improving user experience, which leads to increased sales. · Business Translator: An expert who makes strategic decisions and who also has analytical training suitable to serve as a link between data scientists and business development. · Data Scientist: Special agent in the tasks of application and use of Machine Learning techniques. · Model Integrator: It is part of the chain of professionals responsible for executing Artificial Intelligence and Machine Learning work in the organization. It is a computer scientist who knows how algorithms work and is in charge of applying predictive models, as well as automating the change of that model when the continuous learning process improves it.

List of subjects

MODULE 1. ARTIFICIAL INTELLIGENCE

UNIT 1. INTRODUCTION TO ARTIFICIAL INTELLIGENCE

1. State of the art of artificial intelligence
2. Philosophy of artificial intelligence
3. Future of artificial intelligence
4. Project development process with artificial intelligence
5. Data, your greatest asset

UNIT 2. TYPES OF ARTIFICIAL INTELLIGENCE

1. Machine learning
2. Deep learning
3. Transformers
4. Generation of synthetic data
5. Hyperparameters in artificial intelligence models

UNIT 3. INTRODUCTION TO MACHINE LEARNING ALGORITHMS

1. Linear regression
2. Non-linear regression and support vector machines (SVM)
3. Decision trees, random forests
4. Fuse logic and gradient down
5. Recommendation systems

UNIT 4. TURNKEY PROJECT

1. Preparation of the working environment: Anaconda, Visual Studio Code and Python
2. Input dataset and data preprocessing
3. TensorHub, TensorFlow and Keras
4. Image processing
5. Generation of artificial intelligence models

MODULE 2. DATA MINING, MACHINE LEARNING AND DEEP LEARNING

UNIT 1. SUPERVISED LEARNING (I)

1. Introduction
2. Simple, multiple and logistic linear regression (I)
3. Simple, multiple and logistic linear regression (II)
4. Support vector machines (SVM)
5. Decision trees

UNIT 2. SUPERVISED LEARNING (II)

1. KNN (k-nearest neighbors)
2. Naive Bayes
3. Evaluation of supervised models
4. Example exercise
5. Proposed exercise

UNIT 3. UNSUPERVISED LEARNING

1. Introduction to clustering. purconsider and metrics
2. K-means clustering
3. Hierarchical clustering, other techniques and examples
4. Principal component analysis (PCA)
5. PCA example exercise

UNIT 4. DEEP LEARNING

1. Artificial Neural Networks (ANN) (I)
2. Artificial Neural Networks (ANN) (II)
3. Artificial Neural Networks (ANN) (III)
4. Example exercise
5. Proposed exercise

MODULE 3. ADVANCED DEEP LEARNING

UNIT 1. SUPERVISED DEEP LEARNING (I)

1. Introduction
2. Review. Artificial neural network (ANN)
3. Review. ANN exercises
4. Convolutional Neural Networks (CNN)
5. CNN Exercises

UNIT 2. SUPERVISED DEEP LEARNING (II)

1. Natural language processing (I)
2. Recurrent neural networks (RNN) (I)
3. Recurrent neural networks (RNN) (II)
4. Natural language processing (II)
5. RNN Exercise

UNIT 3. UNSUPERVISED DEEP LEARNING (I)

1. Boltzmann Machines (BM)
2. Restricted Boltzmann Machines (RBM)
3. Recommender systems
4. Recommender systems. metrics
5. RBM exercise

UNIT 4. UNSUPERVISED DEEP LEARNING (II)

1. Self-organizing maps (SOM)
2. SOM exercises
3. Autoencoders (AE)
4. AE exercises
5. Proposed exercise

MODULE 4. TECHNOLOGY ECOSYSTEMS

UNIT 1. INTRODUCTION TO TECHNOLOGY ECOSYSTEMS

1. The fourth industrial revolution
2. Digital transformation in companies
3. Fundaments and key points
4. Benefits
5. Enabling technologies

UNIT 2. ENABLING TECHNOLOGIES (I)

1. Big data
2. Cloud computing
3. Blockchain
4. Artificial intelligence
5. Augmented and virtual reality

UNIT 3. ENABLING TECHNOLOGIES (II)

1. BIM
2. Collaborative robots
3. Additive manufacturing
4. Hyperconnectivity
5. IoT

UNIT 4 ENABLING TECHNOLOGIES (III)

1. Manufacturing execution system (MES)
2. Process integration and efficiency
3. Use cases
4. New methodologies. agile, lean startup or design thinking
5. Business change management

MODULE 5. IDEATION METHODOLOGIES AND TECHNIQUES AND AI PROJECT MANAGEMENT

UNIT 1. INTRODUCTION

1. Introduction
2. Key elements in AI project management
3. AI project characteristics
4. Introduction to the main agile and ideation methodologies
5. Methodology integration

UNIT 2. DESIGN THINKING

1. Introduction
2. Phase I. Empathize
3. Phase II. Define
4. Phase III. Devise
5. Phase IV. Prototype

UNIT 3. LEAN START-UP AND SCRUM

1. Lean start-up. Basic concepts
2. Lean start-up. Tools
3. Scrum. Introduction
4. Scrum. Roles
5. Scrum. Ceremonies and artifacts

UNIT 4. APPLICATION TO AI PROJECTS

1. Introduction
2. Project ideation
3. Project implementation
4. Advise on implementing methodologies
5. Summary and conclusions

MODULE 6. THE IMPACT OF AI ON BUSINESS

UNIT 1. AI APPLIED TO DIFFERENT SECTORS

1. Financial sector
2. Retail sector
3. Industrial sector
4. Agricultural sector
5. Health sector

UNIT 2. AI APPLIED TO DIFFERENT BUSINESS AREAS

1. Logistics and operations
2. Marketing
3. Sales and customer service
4. Finance and control
5. People analytics

UNIT 3. AI AND ENTREPRENEURSHIP

1. Current scenario of a booming sector
2. Financing
3. Featured start-ups
4. Future of the AI ecosystem
5. Starting an AI company

UNIT 4. ETHICS. BUSINESS AND SOCIETY

1. Ethics. General remarks
2. Bias examples
3. Global initiatives
4. Public Institutions and regulations
5. AI in the SDGs

MODULE 7. INTRODUCTION TO BIG DATA

UNIT 1. DATA IN COMPANIES

1. Data information knoledge wisdom
2. Data management (i)
3. Data management (ii)
4. Corporate performance management
5. Databases

UNIT 2. FROM BUSINESS INTELLIGENCE TO BIG DATA

1. Business intelligence
2. Datawarehousing
3. Big data
4. Hadoop
5. Spark

UNIT 3. BIG DATA TECHNOLOGY ARCHITECTURES

1. Hadoop ecosystem (I)
2. Hadoop ecosystem (II)
3. Hadoop ecosystem (III)
4. Spark ecosystem
5. Installation and configuration of big data architectures

UNIT 4. BIG DATA ANALYTICS

1. Analytics
2. Main algorithms (I)
3. Main algorithms (II)
4. Machine learning and deep learning
5. Internet of things

MODULE 8. RELATIONAL DATABASES. SQL. DATA WAREHOUSE

UNIT 1. FIRST STEPS IN SQL

1. Introduction to SQL
2. Database manipulation
3. Data types
4. Normalization

5. Creating tables in SQL

UNIT 2. SQL COMMANDS

1. Table manipulation
2. SQL table query
3. Table joining in SQL
4. Table combinations and views
5. Other SQL commands

UNIT 3. SQL FUNCTIONS

1. String functions and numeric functions (I)
2. Numeric function (II)
3. Date and time functions
4. Other functions
5. Loops, conditionals and triggers in SQL

UNIT 4. DATA WAREHOUSE DESIGN

1. Data warehousing introduction
2. Databases in a data warehouse. Stage
3. Databases in a data warehouse. ODS (I)
4. Databases in a data warehouse. ODS (II)
5. Databases in a data warehouse. DDS

MODULE 9. NOSQL DATABASES

UNIT 1. INTRODUCTION TO NOSQL DATABASES

1. Introduction
2. Polyglot persistence
3. ACID model
4. New trends
5. Comparison between SQL and NOSQL

UNIT 2. NOSQL DATA MODELS

1. Data models
2. Aggregation models
3. Key-value aggregation models
4. Document-oriented data models
5. Column-oriented aggregation models
6. Graph data model

UNIT 3. DISTRIBUTED DATABASES

1. Distributed databases
2. Strategies for the design of distributed DBS
3. NOSQL database design

4. Hadoop distributed file system (HDFS)

UNIT 4. NOSQL DATABASES EXAMPLES

1. Example of a NOSQL aggregation database
2. Riak. Example of a key-value database
3. MongoDB. Example of a document database
4. Neo4J. Example of a graph NOSQL database
5. HBASE. Example of a columnar database

MODULE 10. MFP. MASTER'S DEGREE IN ARTIFICIAL INTELLIGENCE + BIG DATA

Did you find this information interesting?

If you still have questions, our academic advising team will be happy to answer them.

Ask us about our training method, our teachers, scholarships or even just get to know us.

Request information without commitment.

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