



MASTER IN DATA SCIENCE



UCAM
UNIVERSIDAD
CATÓLICA DE MURCIA



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ABOUT EXEED ECX



Exeed ECX is a spin-off of Exeed College - a prestigious entity of higher learning and executive education from Westford Education Group. Exeed ECX provides a unique learning method through its satellite centres via blended learning.

Exeed ECX, with its world-class academics, has accreditation and partnerships with the world's premium universities and awarding bodies. Plymouth Marjon University is a top-ranked, accredited university in the UK that collaborated with Exeed ECX. Other major universities collaborating with Exeed ECX are Universidad Católica de Murcia (UCAM) in Spain, Acacia University in the USA, and GEX Business School in France.

Apart from this, our parent organisation Exeed College has tie-ups with universities across the globe - UCAM (Spain), Liverpool John Moores University (UK) and Carolina University (US) as well as with professional accreditation bodies like Scottish Qualifications Authority (SQA), Chartered Management Institute (CMI), Society for Human Resource Management (SHRM) and Cambridge International Qualification to provide globally recognised qualifications



WESTFORD EDUCATION

Westford Education Group (WEG) is a leading provider of accredited international education to aspiring learners across the globe. Headquartered in the UK, WEG is a pioneer in providing various Academic Degrees, Professional Certificates and Diploma courses in association with international accredited and recognized organizations and universities.

The study programs offered at WEG range from Undergraduate to Doctoral level consisting of master's, post graduate diplomas and doctoral degrees. WEG also provides specialized courses such as Doctor of Business Administration, Doctorate in Management, and Master of Business Administration (MBA) to name a few. Our core competence lies in providing higher National diplomas and professional certificate courses encompassing a wide range of domains specific to various industries.



Westford is fast emerging as a reputed brand of global education providers. WEG comprises 9 independent brands, 7 brands of Higher Education, 2 brands of K-12 education, and 1 brand operating in Sports Management.











Universidad Católica de Murcia

Universidad Católica de Murcia (UCAM), founded in 1996, is a fully-accredited European University based out of Murcia, Spain. With learning centres in the Middle East and Southeast Asia, UCAM aims to provide students with the knowledge and skills to serve society and contribute to the further expansion of human knowledge through research and development.

The university offers various courses, including 30 official bachelor's degrees, 30 master's degrees and ten technical higher education qualifications through its Higher Vocational Training Institute, in addition to its in-house qualifications and language courses.

UCAM is accredited by ANECA (National Agency for Quality Assessment and Accreditation of Spain) and the Ministry of Education regarding 17 of its undergraduate degrees.

-  A fully accredited European University
-  Spain's number two private university in academic output and quality
-  Recognised by the European Higher Education Area
-  Agreements with 167 universities around the world
-  First Spanish university to secure accreditation from ANECA
-  Four stars in the QS Stars rating system

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PROGRAM OVERVIEW

MASTER IN DATA SCIENCE

Master in Data Science program aims to teach students everything they will need to know to be a data scientist. The curriculum is made up of 2 core subjects – Computer Science & Statistics, students will learn how to work with data using python, statistics & algorithms to solve complex problems. Students can choose two elective subjects depending on their previous academic background and interests. If students have a background in statistics, they can take data modeling in statics as an elective or if students have a background in computer science they can opt for Artificial Intelligence & Block Chain. All students are required to undertake a data science capstone project to have a hands-on working experience solving real world problems.

Course Duration: 12 Months

Course Modules: 6 Modules







PROGRAM STRUCTURE

Module 1 - WORKING WITH DATA

Module Description

This module inculcates practical understanding and a framework that allows the execution of essential analytics actions such as extracting, cleaning, changing, and analysing data. In this module, learners grasp the knowledge of programming languages, tools, frameworks, and libraries utilised throughout the course to acquire and model data sets. Data analysis is accomplished through visualising, summarising, and developing rudimentary data handling abilities by paying attention to variable types, names, and values. In addition, managing data using dates, strings, and other elements, enhances learners' abilities to perform data research and generate visualisations.

Learning Outcomes

-  **L01** Analyse information using data visualisation, summary, and counting tools
-  **L02** Acquire rudimentary skills in data handling, focusing on variable types, names, and values
-  **L03** To learn how to use the pipe operator to combine numerous tidying operations in a chain
-  **L04** The ability to work with data that includes dates, strings, and other variable

Content Covered

-  Data Cleaning Techniques
-  Data Preprocessing
-  Data Manipulation
-  Core Python Programming
-  Data Visualisation using Matplotlib
-  Linear Algebra
-  Statistics and Probability
-  Exploratory data analysis
-  Variance, Standard Deviation, Median
-  Bar charts and Line charts
-  Python libraries and framework in data analysis
-  2D Scatter Plot
-  3D Scatter plot
-  Pair plots
-  Univariate, Bivariate, and Multivariate
-  Histograms
-  Boxplot
-  IQR (InterQuartile Range)
-  Data analysis with Pandas

Module 2 - DATA ANALYTICS IN BUSINESS PROCESSES

Module Description

This module addresses the principles of creating reliable spreadsheet models, translating conceptual models into mathematical models, and applying them in spreadsheets. It also demonstrates a knowledge of three analytic tools in Excel, Excel functions, and the process of auditing spreadsheet models to assure accuracy. Additionally covered in this module are Decision analysis, Payoff Tables, and Decision Trees. Microsoft Power BI helps users derive practical knowledge from data to solve business concerns, bringing analytical models to corporate decision-making. Learners acquire insight into advanced analytic features of Power BI, such as prediction, data visualisations, and data analysis expressions.

Learning Outcomes

- L01** Critically analyse the use of business data in an organisational decision-making context
- L02** Demonstrate a critical understanding of business analytics principles in management functions
- L03** Apply appropriate data management and analysis techniques to retrieve, organise and manipulate data
- L04** Apply appropriate statistical data analysis methods and visualisation techniques to make sound business decisions

Content Covered





- Creating Spreadsheet models
- What-If analysis
- Functions for modelling
- Auditing Spreadsheet models
- Predictive and Prescriptive Spreadsheet models
- Problem Identification
- Decision Analysis
- Decision Analysis with or without Probabilities
- Computing Branch Probabilities
- Utility Theory
- Data streaming in Power BI
- Visualisation in Power BI
- Data Analysis expressions
- Report Views in PowerBI
- Data Sorting
- Data Transformation

Module 3 - DATA MINING TECHNIQUES



Module Description

The data mining process includes collecting necessary information from enormous databases that help make a knowledgeable decision. The module demonstrates data mining techniques like data processing, pattern discovery, and trends in information. These methods are employed to obtain the skills and abilities for applying data integration, cleansing, selection, and transformation on tables and graphs for knowledge discovery. Python matrix libraries allow learners to construct some realistic representation of text mining by executing tasks such as classification, estimation, segmentation, forecasting, sequence, and data association.

Learning Outcomes

-  **L01** Understand the fundamentals of text mining and analysis, including identifying exciting patterns, extracting helpful knowledge, and supporting decision-making
-  **L02** Explore fundamental principles of text mining and essential algorithms and some of their practical applications
-  **L03** Be able to apply the learned knowledge and skills to implement scalable pattern discovery techniques on large volumes of transactional data
-  **L04** Engaging in meaningful discussions about pattern evaluation metrics & investigating techniques for mining various patterns, including sequential and sub-graph patterns

Content Covered

-  Introduction to Data mining
-  Data Mining in a Python-based environment
-  What is a data warehouse
-  How to find patterns?
-  Affinity Analysis
-  Product recommendation
-  Introduction to Database Mining
-  Databases and SQL
-  DDL, DML, Joins, and Schemas
-  How to use Python Matrix Libraries on Datasets.
-  Load the Dataset with NumPy
-  Mining-friendly data representations
-  Text Representation for Data Mining.
-  Why is text complex?
-  Text mining
-  Data Modelling, Evaluation, & Deployment in Text Mining
-  Exemplary techniques: Bag of words representation in Text Mining
-  Frequent Subgraph Mining
-  Data Filtering
-  Power Query Editor
-  Risk Analysis
-  Sensitivity Analysis

Module 4 - ALGORITHMS IN DATA SCIENCE

Module Description

This module provides extensive knowledge of splitting data into training, validating, and creating test sets. Develop and assess predictive mining models by integrating a framework and practical perception. There are numerous performance metrics for estimation and categorization systems presented. The most prevalent predictive modelling approaches, including artificial neural networks, support vector machines, k-nearest neighbour, Bayesian learning, ensemble models, and different decision trees, are reviewed in this module, along with their internal workings, capabilities, and applications. Most of these strategies can tackle prediction difficulties of the classification and regression kinds. They are commonly employed to address challenging prediction challenges when other, more traditional approaches fail to deliver results.

Learning Outcomes

- 🕒 **L01** Introduce the fundamental algorithmic concepts, including sorting and searching, divide and conquer, and complex algorithms
- 🕒 **L02** Sort data and use it for search; break down a huge problem into smaller ones and answer them recursively; apply dynamic programming to genomic research; and more
- 🕒 **L03** Discuss and construct the most often used data structures for modern computing
- 🕒 **L04** To be able to use the most industry-used data structures in modern computing

Content Covered

- 🕒 Static Holdout Method
- 🕒 k-Fold Cross-Validation
- 🕒 Class Imbalanced Data
- 🕒 Evaluating the Classification of Categorical Outcomes
- 🕒 Evaluating the Estimation of Continuous Outcomes
- 🕒 Logistic Regression
- 🕒 k-nearest Neighbor
- 🕒 Nearest Neighbor Method for Prediction
- 🕒 Classification and Regression tree
- 🕒 Support Vector Machines
- 🕒 Process-Based Approach to the Use of SVM
- 🕒 Naïve Bayes Methods
- 🕒 Bayesian Networks
- 🕒 Neural Network Architectures
- 🕒 Ensemble Modelling

SPECIALISATION MODULE 1

STATISTICAL DATA MODELLING

Module Description

This module gives learners the insight to apply many prediction models and grasps linear regression. Create predictions based on a group of input variables using regression analysis methods. Learners investigate the way to model an extensive range of real-world interactions using complicated statistical methodologies, such as generalised linear and additive models. This module inculcates intermediate and advanced statistical modelling methodologies. It is specifically created for learners to develop proficiency in linear regression analysis, experimental design, and extended linear and additive models. Based on these skills, interpreting data, discovering links between variables, and generating predictions are made simpler via intuitive representations.

Learning Outcomes

- L01** Differentiate between various types of predictive models and Master linear regression
- L02** Understand the inner workings through algorithms of different models
- L03** Analyse and explore the results of logistic regression and understand when to discriminant analysis
- L04** Maximise analytical productivity by analysing different models and interpreting their accuracy in a well-organised manner

Content Covered

- Selecting a Sample
- Point Estimation
- Sampling Distributions
- Interval Estimation
- Hypothesis Tests
- Statistical Inference and practical significance
- A Simple Linear Regression Model
- Least Square method
- Inference and Regression
- Multiple Regression Model
- Logistics Regression
- Predictions with Regression
- Model Fitting
- Tableau data model
- Shape and data transformation using Tableau Query Editor
- Tableau Report View

SPECIALISATION MODULE 2 - APPLICATIONS OF DATA IN ARTIFICIAL INTELLIGENCE & BLOCKCHAIN

Module Description

In this module, learners will better grasp artificial intelligence (AI) applications in business and comprehend AI decision-making. Through breakthroughs in IoT and the emergence of Blockchain, this curriculum prepares students with a broad foundation of AI-enabled software solutions. As learners continue through this module, they become acquainted with the technology that powers the automated world—knowing the sorts of algorithms and how they may be utilised to enhance or replicate human behaviour across diverse applications. This module teaches about AI, IoT, Blockchain, and machine learning components while building on a solid conceptual framework that will present rigorous, hands-on, and step-by-step ways to tackle realistic, complex real-world challenges.

Learning Outcomes

- 🕒 **L01** Introducing Artificial Intelligence (AI), exploring its features and variants in the business domain. Furthermore, to understand the business context of AI & interpret AI decision-making
- 🕒 **L02** Understand & create an AI implementation plan for a business setup through recognition of suitable model parameters
- 🕒 **L03** To further explore the components of Blockchain & understand Distributed Ledger echnology (DLT) concept, features, benefits, and relevance in application
- 🕒 **L04** Understanding Hyperledger, Smart Contracts, and IoT (Internet of Things) in applied business models to assess the impact in the long term

Content Covered

- 🕒 Introduction to Artificial intelligence
- 🕒 AI enables applications
- 🕒 What is Deep Learning
- 🕒 Artificial Neural Networks
- 🕒 Image Processing and OpenCV
- 🕒 Introduction to NLP
- 🕒 Artificial Neural Networks
- 🕒 Text Processing
- 🕒 Text Classification
- 🕒 Topic Modelling
- 🕒 Major components of IoT
- 🕒 Variety of Sensors
- 🕒 Actuators
- 🕒 IoT protocols at various layers
- 🕒 Applications and user interface in IoT
- 🕒 Introduction to Blockchains

- 🔗 Smart factories of tomorrow and the Industrial Internet of Things
- 🔗 Introduction and usage of Hyperledger & Smart Contract
- 🔗 Blockchains Structure
- 🔗 Centralised, Decentralised, and Distributed systems
- 🔗 Introduction to DLT
- 🔗 DLT features, benefits, & usage in Blockchain
- 🔗 Types of Blockchains
- 🔗 Why Blockchain?
- 🔗 Building AI and ML applications using Blockchain technology

Capstone Project

RESEARCH METHODS & DISSERTATION

Module Description

The purpose of this module is to discuss and explain the role of Data science and its practices in an organisation and their influence on the overall performance and competence of the organisation. This module is designed to develop an understanding of the contemporary practices and competence to develop a research or design question, illustrate how it links to current knowledge and carry out the study in a systematic manner. Learners will be encouraged to pick a research/development project that displays their past learning in the data science domain. It is meant to acquire an understanding of Data Science and the paradigm shift in the approaches and methods related to various functions of DS like data visualisation, probability, inference and modelling, data mining, data organisation, regression, and machine learning to name a few. It also endeavours to highlight the role and significance of data analytics and data modelling during the planning, decision-making, and implementation of change in the organisation. Upon successfully completing the module, the participants will have comprehensive knowledge about the broader data analysis context and a data product to demonstrate their data science expertise to potential employers or educational programs.

Learning Outcomes

- 🔗 **L01** Conduct independent Research and Development within the context of a Data Science Project

- 🔗 **L02** Developing the ability to independently solve problems using analytics and data science

- 🔗 **L03** Communicate technical information clearly and succinctly to a broad, non-specialist audience.

- 🔗 **L04** Create detailed written documentation to a standard expected of a professional in the field of Data Science & evaluate Project outcomes with reference to key research publications in the relevant field.



TRAINING

KEY FEATURES



200 hours of live instructor-led training



3 industry based projects, 6 assignments



24/7 support and LMS Access



Hands on experience with latest tools & applied projects



Live engagement classes by seasoned academics and professionals



Internship/Projects



Flexible timing for working professionals



EMI option



ELIGIBILITY

Students seeking admission to the course may have to fulfill the following criteria/requirement.

- 🕒 Bachelor's Degree from a recognized University
- 🕒 Proficiency in the English language

PREREQUISITES

Due to its involvement in modern Machine Learning algorithms with math and programming, candidate having knowledge with linear algebra, probability and calculus could be a plus.



TOOLS/FRAMEWORKS/LIBRARIES

- 🕒 Scripting Tools : Python
- 🕒 Tools /Libraries : Pandas,numPy, seaborn, matplotlib, cufflinks, scikit, NLTK, CoreNLP, spaCy, PyNLP, Tensorflow, Keras, Open CV, Power BI, Excel
- 🕒 IDE Shell : Jupyter Notebook, google colab, pycharm, visualstudio code



APPLICATION & USE CASES



Traffic Management



Road Safety



eCommerce



Banking



Marketing & Sales



Health Care



Forecasting



Manufacturing



Retail

CAPSTONE PROJECTS

Showcase your capability with the real-world projects

Bring Your Own Project

Learn to solve a problem that you/your organisation is facing using Data Science

OR

Choose From Curated Capstone Projects



HOUSE RENTAL PREDICTION



IMAGE CLASSIFICATION



BUSINESS INSIGHTS REPORTING

INTERNSHIP/PROJECTS

Airtics provides internships in the respective field for a period of 5-6 months to all eligible and able students.

INTERNSHIP/PROJECTS INCLUDES:

- Mentoring by software developers
- Live workshops on projects
- Internship certificate
- Candidate's evaluation



After successfully completing the learning modules, eligible students would move on to internships

PLACEMENT SUPPORT

Airtics's high level of instruction has attracted an increasing number of companies, and the placement scene is expanding. Candidates who excel in internship will be eligible for placement at top MNC's that work with Airtics.

- Deliver five proof-of- concept a month
- We will have our partner companies review the POCs
- 3 guaranteed interviews
- JD based Support training
- Placement in MNC

CERTIFICATION



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