



POST GRADUATE DIPLOMA IN AI & ML



UCAM
UNIVERSIDAD
CATÓLICA DE MURCIA



INDEX

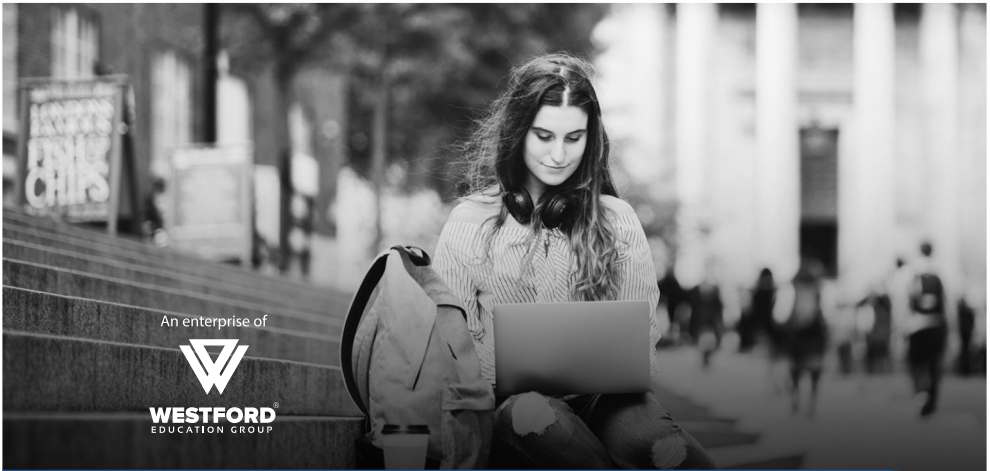
| | |
|------------------------------|----|
| ○ About Exeed ECX | 03 |
| ○ About Westford Education | 04 |
| ○ About UCAM | 05 |
| ○ Program Overview | 06 |
| ○ Program Structure | 07 |
| ○ Training Key Features | 13 |
| ○ Eligibility | 15 |
| ○ Prerequisites | 15 |
| ○ Tools/frameworks/libraries | 15 |
| ○ Application & Use Cases | 16 |
| ○ Capstone Projects | 16 |
| ○ Internship/Projects | 18 |
| ○ Placement Support | 18 |
| ○ Certification | 19 |



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



An enterprise of



ABOUT

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.

ABOUT UCAM



UCAM
UNIVERSIDAD CATÓLICA
DE MURCIA

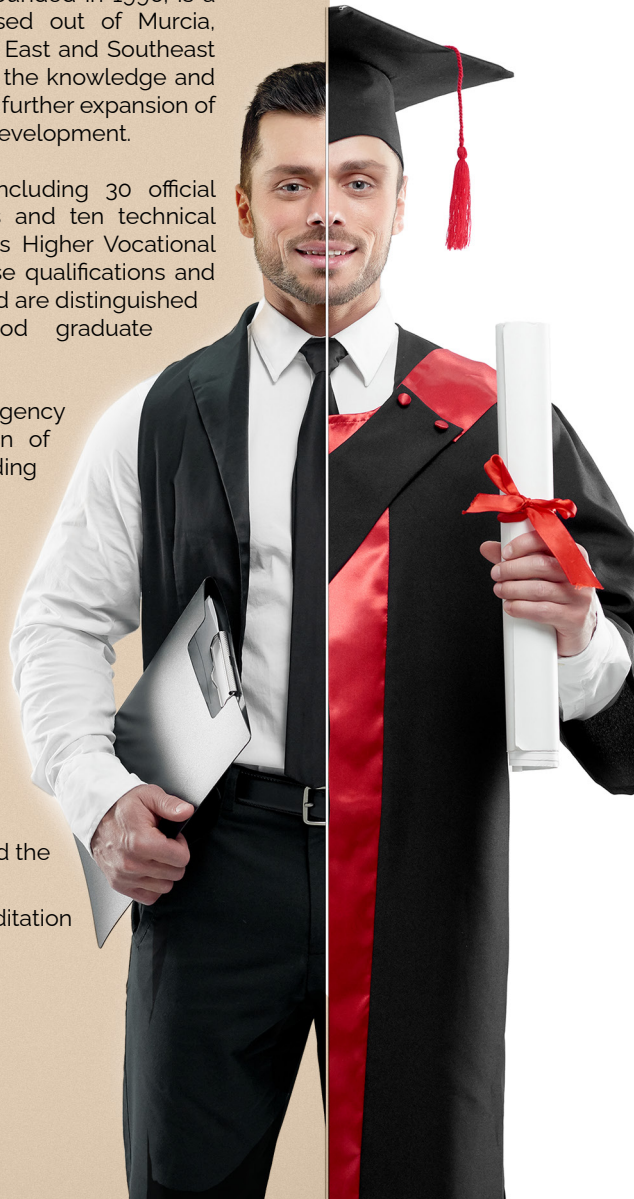
Universidad Católica de Murcia (UCAM), founded in 1996, is a fully-accredited European University based out of Murcia, Spain. With learning centres in the Middle East and Southeast Asia, UCAM aims to provide students with the knowledge and skills to serve society and contribute to the further expansion 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. The programmes offered are distinguished in Europe and worldwide, with good graduate employability prospects as well.

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.

Key features:

- 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



PROGRAM OVERVIEW

PG DIPLOMA IN ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

PG Diploma in Artificial Intelligence & Machine Learning has been designed to upskill students from various academic background with essential mathematics and programming enabling students to have a strong foundation to learn AI & ML with ease. The curriculum is not just academic in nature but provides hands on learning approach with latest industry practices. You will learn how big data is collected, cleaned and used in machine learning algorithms to make prediction for decision making & problem solving. You will also learn fundamentals of deep learning using neural networks to build algorithm that find the best way to perform task on their own.

Course Duration: **9 Months** | Course Modules: **6 Modules**



PROGRAM STRUCTURE

MODULE 1

CREDITS : 20

BASICS OF PYTHON

Basic Python Programming

- Variable & data types
- Conditional statements
- Loops
- Functions

Essential Python libraries for data science

- Pandas
- Numpy
- Scikit

Setting up Python for Machine Learning

LEARNING OUTCOMES

- **L01** Learn basic concepts of Python
- **L02** Acquire rudimentary skills to write programs in Python
- **L03** Ability to use Python for Data Science & Machine learning
- **L04** Get application-ready with essential Python libraries & tools



MODULE 2

CREDITS : 20

MATHEMATICS AND STATISTICS FOR ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

- **Linear algebra**
- **Probability Theory**
- **Statistics**
- **Statistical tools**
 - CSV
 - Excel

LEARNING OUTCOMES

- **L01** Master the mathematical foundation required for writing programs
- **L02** Learn mathematical and statistical foundations required for AI & ML
- **L03** Acquire mathematical knowledge to build algorithms for data analysing
- **L04** Apply statistical analysis techniques using essential softwares on data sets



MODULE 3

CREDITS : 20

PYTHON FOR MACHINE LEARNING

- **Python Programming for AI & ML**
 - Essential Python libraries for data analysis
 - Data storage and manipulation by NumPy
- **Data Visualization using Matplotlib**
- **Data Analysis with Pandas**
- **Basic introduction to Sci-kit-learn**

LEARNING OUTCOMES

- **L01** Acquire practical skills in data analyzing, handling & visualization using Python tools
- **L02** Perform mathematic operations on a wide range of data using NumPy
- **L03** Operate Pandas to sort through & rearrange data, run analyses, & build data frames
- **L04** Ability to analyze by visualizing data with Matplotlib



MODULE 4

CREDITS : 20

INTRODUCTION TO MACHINE LEARNING & ARTIFICIAL INTELLIGENCE

- Introduction to ML & AI
- Supervised Learning
- Unsupervised Learning
- Reinforcement Learning
- Machine Learning Algorithms
Regression, Classifiers, Clustering
- Machine Learning Task
Dataset, Data Cleaning, Algorithm Selection, Training & Testing Model

LEARNING OUTCOMES

- L01 Understand Artificial Intelligence and Machine Learning fundamentals
- L02 Demonstrate a comprehensive knowledge of the nature of the data and techniques used for pre- processing the data for machine learning
- L03 Introduction to major machine learning algorithms like Classifiers (for image, spam, fraud), Regression (stock price, housing price, etc.), Clustering (unsupervised classifiers)
- L04 Demonstrate a deep critical understanding of algorithms and mathematics behind established ML approaches



Natural Language Processing Pathway SPECIALISATION MODULE 1

CREDITS : 20

ADVANCED PYTHON FOR NLP

Core Python for computer vision

- Strings
- Regex

Machine Learning algorithms

- Regression
- KNN
- SVM

Computer vision tools

- Keras
- TensorFlow

LEARNING OUTCOMES

- **L01** Understand basic concepts and standard tools used in NLP
- **L02** Acquire the prerequisite Python skills to move into Natural Language Processing
- **L03** Understand NLP python packages to enable them to write scripts for text pre-processing
- **L04** Learn popular machine learning algorithms, Feature Selection, and the Mathematical intuition behind them



SPECIALISATION MODULE 2

CREDITS : 20

MACHINE LEARNING FOR NLP

- **Introduction to ML**
- **Supervised learning**
- **Unsupervised learning**
- **ML deployment**
- **Automated speech recognition**
- **Text-to-speech conversion**
- **Decision theory**
- **Regression**
- **Classification**
- **Text Analysis applications**
- **Feed-forward neural networks**
- **Recurrent neural network**
- **Convolutional neural network**
- **Utterance classification**
- **Sequence tagging**

LEARNING OUTCOMES

- **L01** Concepts of deep learning to build artificial neural networks and traverse layers of data abstraction and get a solid understanding of deep learning using TensorFlow and Keras
- **L02** Understanding text processing and vectorization for ML Use case
- **L03** Develop and build fully automated NLP algorithms in Burt and transformers
- **L04** Understand the concepts of NLP, feature engineering, natural language generation, automated speech recognition, speech-to-text conversion, text-to-speech conversion

Computer Vision Pathway

SPECIALISATION MODULE 1

CREDITS : 20

ADVANCED PYTHON FOR COMPUTER VISION

Core Python for computer vision

- Strings
- Regex

Machine Learning algorithms

- Regression
- KNN
- SVM

Computer vision tools

- Keras
- TensorFlow

LEARNING OUTCOMES

- **L01** Understand the Basic python tools used for Computer Vision
- **L02** Understand image processing python packages to enable them to write scripts for text pre-processing
- **L03** Learn popular machine learning algorithms, Feature Selection, and Mathematical intuition behind it
- **L04** Understand basic concepts and standard tools used in computer vision



SPECIALISATION MODULE 2

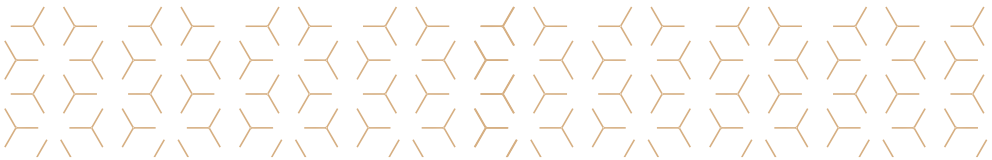
CREDITS : 20

MACHINE LEARNING FOR COMPUTER VISION

- Introduction to Computer Vision
- Deep Learning Network Models
- Convolutional Neural Networks
- Recurrent Neural Networks
- Introduction to Keras Model Life-Cycle
- Image Data Manipulation using Pillow Python library.
- Convert Images to NumPy Arrays and Back

LEARNING OUTCOMES

- **L01** Concepts of deep learning to build artificial neural networks and traverse layers of data abstraction and get a solid understanding of deep learning
- **L02** . Develop and build fully automated CV algorithms USING YOLO
- **L03** Develop the usage of Deep learning models like CNN and RNN
- **L04** Gain insights about advancements in CV, AI, and Machine Learning techniques



CAPSTONE PROJECT

CREDITS : 60

- **Clarifying the terms of the research**
- **Suggesting areas of reading**
- **Apply the knowledge base and abilities taught throughout the course to a real-world scenario**
- **The Problem, Understanding It, and Getting Data**
- **Frame a business issue in a manner that can be solved with AI & ML**
- **Apply Exploratory Data Analysis and Modeling**
- **Identify the methodology or algorithm that will handle the proposed challenge**
- **Reviewing the proposed methodology**
- **Establishing a research timetable, including initial dates for further meetings between the student and supervisor**
- **Advising students about appropriate standards & conventions concerning the assessment.**
- **Providing means of contact in addition to tutorials**
- **Educate learners to research and write their results and thoughts correctly, clearly, logically, and to a high-professional degree**

LEARNING OUTCOMES

- **L01** Conduct independent research and development within the context of an AI & ML project
- **L02** Produce detailed documentation to a standard expected of a professional in the field of AI & ML
- **L03** Communicate technical information clearly and succinctly to a broad, non-specialist audience
- **L04** Apply knowledge of research principles and methods to plan and execute a research based industry project with a high level of personal autonomy and accountability

TRAINING KEY FEATURES



144 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



3 guaranteed interviews by Airtics



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
- IDE Shell : Jupyter Notebook, google colab, pycharm, visualstudio code
- Automated Machine Learning Models : Supervised,Unsupervised, Reinforced learnings



APPLICATION & USE CASES



eCommerce



Banking



Marketing & Sales



Natural Language Processing



Health Care



Forecasting



Manufacturing



Education



Retail

CAPSTONE PROJECTS

Showcase your capability with the real-world projects

Bring Your Own Project

Learn to solve a problem which you/your organization is facing using AI & ML

OR

Choose From Curated Capstone Projects



HOUSE RENTAL PREDICTION



IMAGE CLASSIFICATION



BUSINESS INSIGHTS REPORTING





INTERNSHIP/PROJECTS

Exeed ECX provides internships in the respective field for a period of 3-4 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

Exeed ECX'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



UCAM
UNIVERSIDAD
CATÓLICA DE MURCIA

International Certification by
UCAM - Spain






UCAM
UNIVERSIDAD
CATÓLICA DE MURCIA



Regional office:
City Center Complex, Pattambi Road, Perinthalmanna,
Malappuram, Kerala, India 679322

 Corporate office:
Suite 703, City Gate Tower, Al Ittihad Road, Al Tawun, Sharjah, UAE

An enterprise of
WESTFORD
VENTURES