



University of
Central Lancashire
UCLan



Engineering Academy 2021

Programme 1: Predictive Maintenance

Date: 3 - 17 September 2021

Fee: £1,200 including accommodation

All programmes focus on activities that allow students to practise the topic area of each programme and develop their skills. All programmes include lectures, tutorials, and a course project. This programme is a non-credit bearing activity.



Programme Aims

This programme introduces maintenance strategies and maintenance planning, including predictive maintenance strategy. The programme will cover practising condition monitoring techniques, including vibration analysis, acoustic emission monitoring, oil analysis, and their industrial applications. All attendees will be encouraged to join the condition monitoring project competition.

Topics Covered

- Introduction to Maintenance and Maintenance Planning
- Maintenance Strategies and Predictive Maintenance
- Condition Monitoring Techniques; Vibration Analysis, Acoustic Emission Monitoring, Oil Analysis
- Industrial Applications on Machinery Vibration
- Maintenance Planning
- Development of Intelligent Condition Monitoring Systems using Artificial Intelligence

Fee

£1,200 includes accommodation (en-suite room), and three trips to local sites and one trip to London or Edinburgh (subject to availability).

The fee does not cover visa, flights, insurance, food or local travel. Booking should be made before 1 March 2021.

For further information and booking enquiries please contact:

Dr. Ahmed Onsy
Email: aonsy@uclan.ac.uk
Call: +44 (0)1772 893266





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Engineering Academy 2021

Programme 2: Operations Management

Date: 3 - 17 September 2021

Fee: £1,200 including accommodation

All programmes focus on activities that allow students to practise the topic area of each programme and develop their skills. All programmes include lectures, tutorials, and a course project. This programme is a non-credit bearing activity.



Programme Aims

The aim of the programme is to broaden the participants' knowledge in operations management and to apply it to real-life scenarios based on analytical, numerical and theoretical approaches.

Participants will gain a broader understanding of how to manage, analyse, and plan operations not only in the industry, but also in any commercial facility. They will also be able to apply learned practical skills to their industrial environment.

Topics Covered

- Introduction to Operations Management
- Project Management
- Managing Quality
- KAISAN, Lean Systems and KANBAN
- Simulation using SIMUL8 Software
- Factories Layout & Planning Capacity
- Decision Making
- Supply Chain

Fee

£1,200 includes accommodation (en-suite room), and three trips to local sites and one trip to London or Edinburgh (subject to availability).

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Engineering Academy 2021

Programme 3: Intelligent Machines

Date: 3 - 17 September 2021

Fee: £1,200 including accommodation

All programmes focus on activities that allow students to practise the topic area of each programme and develop their skills. All programmes include lectures, tutorials, and a course project. This programme is a non-credit bearing activity.



Programme Aims

This programme introduces mechatronics systems and intelligent machine elements, including different sensors, actuators, controllers, signal conditioning, and examples of software used in systems development. All attendees will be encouraged to join the Mechatronics Project Competition.

Topics Covered

- Introduction to Mechatronics Systems; Intelligent Machines
- Sensors and Transducers: Conventional and Robotics Sensors
- Controllers: Microprocessors, Microcontrollers, DAQ
- Examples of Software Used in Mechatronics Systems
- Actuators: Electrical, Hydraulic, Pneumatic
- Signal Conditioning: A/Ds, Amplifiers, Filters, WB, PM, Protection
- Development of Intelligent Machines and Smart Systems; Artificial Intelligence

Fee

£1,200 includes accommodation (en-suite room), and three trips to local sites and one trip to London or Edinburgh (subject to availability).

The fee does not cover visa, flights, insurance, food or local travel. Booking should be made before 1 March 2021.

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Engineering Academy 2021

Programme 4: Sensors and Instrumentation in Practice

Date: 3 - 17 September 2021

Fee: £1,200 including accommodation

All programmes focus on activities that allow students to practise the topic area of each programme and develop their skills. All programmes include lectures, tutorials, and a course project. This programme is a non-credit bearing activity.



Programme Aims

This programme will provide you with a comprehensive understanding of different types of sensors, the use of advanced instrumentation, industrial instruments, data acquisition, and allow you to practice software development using several case studies in measurement systems. All attendees will be encouraged to join the Programme Competition.

Topics Covered

- Introduction to Measurement Systems
- Sensors Characteristics
- Data Acquisition
- Introduction to Software used in Measurement Systems
- Measurement of Displacement, Speed, Level, Temperature, Strain, Torque, Power, Vibration, Flow and Pressure
- Application Examples
- Presentation & Communication Skills

Fee

£1,200 includes accommodation (en-suite room), and three trips to local sites and one trip to London or Edinburgh (subject to availability).

The fee does not cover visa, flights, insurance, food or local travel. Booking should be made before 1 March 2021.

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Engineering Academy 2021

Programme 5: Tectonic and Digital Crafts

Date: 3 - 17 September 2021

Fee: £1,200 including accommodation

All programmes focus on activities that allow students to practise the topic area of each programme and develop their skills. All programmes include lectures, tutorials, and a course project. This programme is a non-credit bearing activity.

Programme Aims

This programme focuses on enhancing the participant's ability and confidence to generate detailed construction design from first principles and considered precedent, in the design of architecture. A range of approaches adopted for different building types and climatic locations will also be covered. The function and construction of the tectonic elements of buildings and their interrelationship with architectural form, structure and building services.

By completing the whole programme, the participants will be able to determine appropriate strategies for the integration of form and tectonics in architectural design, critically evaluate the technical and regulatory factors for an architectural proportion, and explain, present and detail coherent resolution of structure, construction and environmental modification and material issues in the design.

Topics Covered

- Design Detail
- RIBA Plan of Work
- Drones
- Physical
- Digital Twinning
- Structuring
- Passive Design Approaches
- BIM
- Digital 3D Modelling and Printing
- Materiality

Fee

£1,200 includes accommodation (en-suite room), and three trips to local sites and one trip to London or Edinburgh (subject to availability).

The fee does not cover visa, flights, insurance, food or local travel. Booking should be made before 1 March 2021.

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Engineering Academy 2021

Programme 6: Building Information Modelling (BIM)
and Professional Practice

Date: 3 - 17 September 2021

Fee: £1,200 including accommodation

All programmes focus on activities that allow students to practise the topic area of each programme and develop their skills. All programmes include lectures, tutorials, and a course project. This programme is a non-credit bearing activity.

Programme Aims

The purpose of the programme is to give participants an opportunity to gain an understanding of Building Information Modelling (BIM) and evaluate the impact such technologies may have on design and construction processes and to develop the participant's professional perspective of their own practice and the wider context of the construction sector working within a collaborative environment.

By completing the whole programme, the participants will gain an understanding of a wide range of roles, responsibilities and activities that are involved within his/her discipline and how the use of Building Information Management (BIM) can aid plan workflow and adopt protocols and standards for information sharing with the wider project team and help the participant to understand where his/her role sits within this context. There will be a structured programme of lectures, workshops and seminar sessions.

Topics Covered

- BIM Definitions and Concept, Process and Protocols and Standards
- RIBA Plan of Work 2020
- Building Regulations and Planning Process
- Introduction to Health and Safety
- Digital 3D Modelling and Printing
- How to Manage Contracts
- Understanding Clients and their Requirements and Expectations

Fee

£1,200 includes accommodation (en-suite room), and three trips to local sites and one trip to London or Edinburgh (subject to availability).

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Engineering Academy 2021

Programme 7: Artificial Intelligence in Practice

Date: 3 - 17 September 2021

Fee: £1,200 including accommodation

All programmes focus on activities that allow students to practise the topic area of each programme and develop their skills. All programmes include lectures, tutorials, and a course project. This programme is a non-credit bearing activity.



Programme Aims

The Deep Learning course covering the academic theory and application of machine learning (ML) and deep learning (DL) on GPUs using the PyTorch and Torch computing frameworks.

Topics Covered

- Introduction to Machine and Deep Learning
- Supervised Learning
- Applied Approaches to Image Classification
- Applied Approaches to Object-detection
- Convolutional and Recurrent Neural Networks
- Applied Approaches to Image Segmentation
- Unsupervised Learning
- Natural Language Processing
- Adversarial Networks

Fee

£1,200 includes accommodation (en-suite room), and three trips to local sites and one trip to London or Edinburgh (subject to availability).

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