

BEng (Hons)



Fire Engineering

消防工程學榮譽工學士

Part-time Year 2022 • 17th Intake • Programme Code: 223-29240



Suitable for Sub-degree Holders



Begin UK Study Journey
@ CityU SCOPE 2022

QF Level : 5
QR Registration No: 14/002657/L5
Validity Period: 1 Sep 2014 to 31 Aug 2023



Leading the way in modern learning

The University of Central Lancashire (UCLan) is an international, multi-campus University tracing its roots back to 1828 and leading the way in modern learning today. The main campus is based in Preston in UK. UCLan always believes in helping all to seize every opportunity to flourish in education, at work and for life and is innovative by nature, offering more choices and creating more possibilities. Combining academic excellence and real-world teaching, the University gives people the skills and experience that the industry needs (<https://youtu.be/l1dylH8zOnU>)

The University of Lancashire (UCLan) is now one of the UK's largest universities with a staff and student community approaching 38,000. Its employment-focused course portfolio with over 350 undergraduate programmes, nearly more than 200 postgraduate courses and rich array of CPD courses means that the University offer students the skills and experience that industry needs.

Building on last year's impressive rise of 27 places, UCLan has climbed a further 5 places in the Complete University Guide 2021 and are now ranked 70th out of 130 institutions. And UCLan has been ranked first for the money invested into student wellbeing services according to the 2020 Student Welfare League Table. UCLan has been awarded Silver in the UK Government's 2017 Teaching Excellence Framework (TEF).

Achievements :

- The UCLan community is made up of students from more than 100 countries around the world. And UCLan is partnered with 123 institutions across the globe making UCLan a truly international University.
- In 2021-22, the Center for World University Rankings (CWUR) placed UCLan in the top 7% of universities worldwide.

The School of Engineering :
www.uclan.ac.uk/schools/engineering

Details in this publication are accurate at the time of printing but subject to revision in the future.



Why Fire Engineering?

Fire Engineering is the science of formulating fire safety solutions or mitigating measures for modern buildings or structures based on quantifying hazards, assessing risks and gauging human response. This "fire engineering approach" is now widely adopted in world-class cities for complex and voluminous buildings; and allows greater flexibility in designs, choice of materials, and more cost effective solutions without compromising the primary goal of life safety.

Apart from the building safety design using the traditional prescriptive codes, this programme will also emphasis on performance-based design with an aim to prepare students to meet the need of the industry.

HKCAAVQ Accreditation

This programme is:

- accredited by the Hong Kong Council for Accreditation of Academic and Vocational Qualifications (HKCAAVQ) to reach HKQF Level 5;
- equivalent to the standing of bachelor's degrees offered by local universities in Hong Kong; and
- recognised by the Hong Kong Government for employment purposes within the Civil Service.

BEng (Hons) Fire Engineering

The University of Central Lancashire (UCLan), through the School of Continuing and Professional Education (SCOPE), City University of Hong Kong (CityU), is offering a part-time programme leading to the award of BEng (Hons) Fire Engineering. The programme is supported by the Institution of Fire Engineers (HK Branch) (IFE(HK)). There are more than 150 part-time current students studying this programme in 2021-2022 academic year and around more than 350 graduates successfully completed the whole programme in the previous 4 years.

Professional Recognition

The BEng(Hons) Fire Engineering of UCLan is accredited by the Energy Institute (EI) on behalf of the Engineering Council (EC) for the purposes of partially meeting the academic requirement for registration as a Chartered Engineer. The BEng (Hons) in Fire Engineering of UCLan PLUS MSc in Fire Safety Engineering of UCLan are accredited by the Energy Institute (EI) on behalf of the Engineering Council (EC) for the purposes of fully meeting the academic requirement for registration as a Chartered Engineer.



Graduates of BEng (Hons) in Fire Engineering PLUS MSc in Fire Safety Engineering awarded by UCLan can fulfill the academic requirement for the HKIE membership in fire discipline.

UK programmes have been re-accredited by Energy Institute in UK and Hong Kong programmes are waiting for the Energy Institute's re-accreditation visit.

Unique features

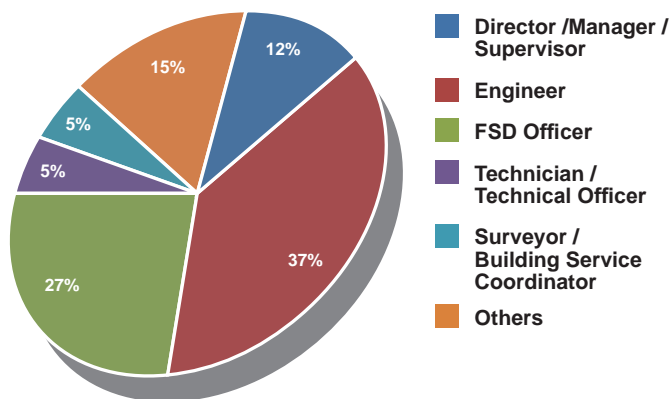
- Provides a pathway to students to become a professional engineer through part-time study
- Strong links with industry and professional bodies
- Access to CityU's library, Computing Services Centre and CityU SCOPE Resources Centre with dedicated collections on fire engineering.

Who Should Apply?

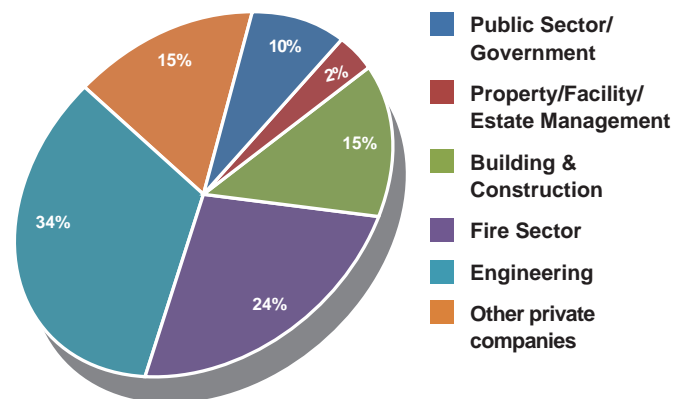
- Fire Safety Consultants
- Fire Protection Engineers
- Fire Testing Professionals
- Fire Engineering Practitioners
- Building Services Engineering Practitioners
- Fire Services Members
- Industrial Loss Prevention Officers
- Interested Students

Previous Students' Profiles

Students in recent cohorts come from diverse backgrounds



2021 cohort (by Job Position)



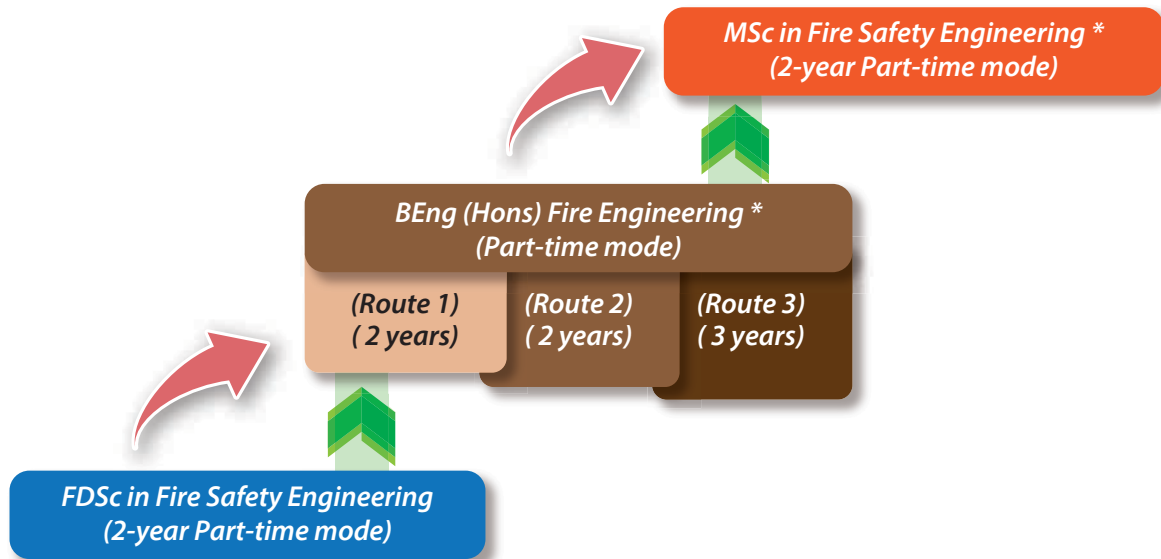
2021 cohort (by Profession)

Programme Aims

This programme has the following learning aims:

- Prepare students with the necessary scientific, engineering and technological knowledge and skills to resolve complex design problems in fire and fire safety applications;
- Develop a suitable understanding and application of management skills, including team work, leadership and organisation to implement strategies to resolve engineering design problems and projects;
- Develop an expertise in the application of fire and safety management systems to resolve problems, implement safe design solutions and to ensure safe working environments;
- Develop the use of appropriate analytical and computational methods in the study of fires and the resolution of fire engineering problems for the built environment and related infrastructure;
- Provide an understanding and application of the legal principles as they impact upon the study of fires and fire safety, including design, project control and implementation.










Progression Pathway



* Graduates holding the awards of BOTH BEng (Hons) Fire Engineering of UCLan and MSc in Fire Safety Engineering of UCLan fulfill the academic requirement for CEng & MHKIE(Fire Discipline).

Programme Structure

There are three entry points. Students are required to complete 180 credits (Route 1), 230 credits (Route 2) or 360 credits (Route 3) over 2 or 3 years of part-time study.

Module Title	Credits	Route 1 (180 credits)	Route 2 (230 credits)	Route 3 (360 credits)
Project Management	10	✓	✓	✓
Computational Engineering 	20	✓	✓	✓
Engineering Analysis 2 	20	✓	✓	✓
Enclosure Fire Dynamics 	20	✓	✓	✓
Fire Protection Engineering 	20	✓	✓	✓
Fire Investigation	20	✓	✓	✓
Probabilistic Risk Analysis 	20	✓	✓	✓
Engineering Design Project	20	✓	✓	✓
Engineering Dissertation	20	✓	✓	✓
Introduction to Combustion and Fire 	20		✓	✓
Fire and Built Environment 	20		✓	✓
Fluid Dynamics of Fire	20		✓	✓
Accidents and Catastrophes	10	✓		✓
Safety and Fire Law	10			✓
Energy Transfer and Thermodynamics 	20			✓
Buildings, Materials and Fire	20			✓
Engineering Design Practice 	20			✓
Engineering Analysis 1	20			✓
Skills for Science and Engineering	10			✓
Safety, Health and Environment	20			✓

* The module combination and teaching sequence are subject to revision by UCLan.

Module Descriptors

Introduction to Combustion and Fire

This module introduces the learner to the fundamental scientific principles of combustion and fire. The primary goal is to provide students with general understanding and knowledge of combustion, fire and explosion phenomena. The main definitions, approaches and techniques developed in combustion and fire science and engineering are introduced to set the scene for the further in-depth studies through all other fire related modules in the Fire Curriculum. Alongside the introduction to fires and combustion, the module provides basic information and knowledge from related disciplines (chemical kinetics and thermodynamics, fluid dynamics, heat and mass transfer). This introduces all necessary elements, which are required to start a consistent further education in the diverse and multidisciplinary area of fire safety.

Safety and Fire Law

This module will provide a general understanding of the nature and extent of the legal system operating in the UK/HK. It will also provide the student with knowledge and understanding of the principles of the law used by managers in the workplace and will include Safety and Fire Law.

Energy Transfer and Thermodynamics

This module introduces students the main principles of energy transfer, thermodynamics and fluid dynamics. The main definitions, approaches and techniques are introduced to set the scene for the further in-depth studies through all other energy related modules in the energy and fire safety engineering curriculum. Alongside the introduction to energy transfer and thermodynamics, the module provides basic information and knowledge from related disciplines (general physics, fluid dynamics, heat and mass transfer). This introduces all necessary elements, which are required to start a consistent further education in building and fire safety engineering.

Engineering Design Practice

This module allows students to apply scientific and engineering principles based on an understanding of the phenomena and effects of fire and of the behaviour of people to fire, to protect people, property and the environment from the destructive effects of fire. This course addresses multi-disciplinary aspects involving chemistry (e.g. the behaviour of materials), physics (e.g. heat transfer, movement of smoke), civil engineering (e.g. deformation of structures), electrical and mechanical engineering, and psychology (e.g. behaviours of people). Students will explore how to provide an acceptable level of safety when an accidental fire occurs and consider the implications on innovative and experimental sustainable design solutions.

Buildings, Materials and Fire

All parts of buildings and their contents must be made of something. The art of construction is to use materials in such a way that they are not exposed to conditions they cannot tolerate. The overall aim of this module is to introduce students to the functional requirements of materials for structures and describe the main features of the principal materials in use and the way structures are designed to take account of those features. This module will introduce the student to the principles of construction methods. This module will also develop the students' knowledge and understanding of the behaviour, performance and limitations of construction materials. This module is designed to provide students with an appreciation of the properties and design implications of construction materials and introduce the student to structural design of buildings and building elements exposed to fire.

Engineering Analysis 1

To establish fundamental mathematical skills and provide a framework of mathematical techniques with which to analyse engineering problems; thence to apply them in the analysis and solution of common engineering problems. Students are required to practice solving applied mathematical problems.

Skills for Science and Engineering

This module aims to enable the students to develop the mathematical, statistical, analytical, information technology, communication and research skills, which are required to progress through the course. This will include a range of presentation and communication skills using a variety of media.

Fluid Dynamics of Fire

This module aims to enable the students to assimilate the fundamental principles underlying fluid flow and to apply these to fires and explosions. The module is designed to develop theoretical and practical themes introduced in Level 4. The aim of this module is to further improve qualitative understanding of combustion, fire and explosion phenomena and develop skills in their quantification.

Fire and Built Environment

This module aims to develop an awareness and understanding of the impact of fires on the environment, including engineering sustainability, sustainable building construction methods and materials, sustainable communities and legal, regulations and standards issues. It explores different types of fire behaviour in the built environment. The module provides students with case studies of the impact of fires on the environment nationally (UK/HK) and internationally. Through the learning and teaching strategy, the module will also enhance students' employability skills such as independent working, analysis, problem solving and presentations.

Accidents and Catastrophes

This module aims to develop an awareness and understanding of accident and catastrophe phenomena and their impact on society. It explores different types of natural and technological accidents and catastrophes and their effect on the built environment. The module provides students with case studies of the impact of fires on buildings nationally (UK/HK) and internationally. Through the learning and teaching strategy, the module will also enhance students' employability skills such as independent working, analysis, problem solving, presentations and working with others.

Safety, Health and Environment

The aim of this module is to:

- provide an understanding of the of health, welfare and safety legislation relevant to the construction, engineering and associated industries;
- provide the principles and processes necessary for the management of environmental, health and safety issues in the workplace.
- provide the basic principles necessary for the identification and control of hazards, the management of safety and health together with applicable legislation.
- demonstrate an understanding of how safety and environmental management is practiced in a project environment.

Project Management

This module aims to focus on the role and responsibilities of the project manager, together with the leadership and organisation skills essential to the discharge of this function. The application of the role of the professional project manager and associated analytical, monitoring and controlling techniques will be developed.

Computational Engineering

The module aims to provide students with fundamental knowledge and skills of using computing in fire hazard analysis. This includes both essential numerical programming skills required to carry out basic engineering computations within generic programming environments and application of specialist software to solve typical computational problems of fire engineering.

Engineering Analysis 2

To establish fundamental mathematical skills and provide a framework of mathematical techniques with which to analyse engineering problems; thence to apply them in the analysis and solution of common engineering problems. Students are required to practice solving applied mathematical problems.

Enclosure Fire Dynamics

This module builds upon and develops a deeper technical foundation of the fire-science skills and knowledge gained at Level 4 and Level 5 to establish the students' competence in the understanding of enclosure fires and the dominant mechanisms controlling enclosure fires. The module will also enhance students' employability skills such as critical thinking, independent research, problem solving.

The module includes a wide range of commonly used relationships, solutions and models as well as information and knowledge across related disciplines (chemical kinetics and thermodynamics, fluid dynamics, heat and mass transfer, etc.).

Fire Protection Engineering

This module will look at the principles of fire protection, standard test procedures and methods of solving fire safety problems using active and passive fire safety systems. In particular the focus will be towards innovative/engineered solutions to fire safety problems.

The module aims to develop the student's skills of numerical analyses and critical evaluation in appropriate fire protection applications.

Fire Investigation

The module will develop student's ability to undertake a scientific fire investigation of a fire scene while ensuring the requirements with respect to safety, scene preservation, evidence collection and presentation are fully achieved.

Probabilistic Risk Analysis

This module aims to develop mainstream engineering analysis techniques for engineering students. The emphasis is in application to probabilistic risk modelling. The module will enhance students' skills of analysis, modelling and problem solving. Such mathematical methods are 'expected' across engineering programs throughout the world.

Amongst the methods taught it is intended to focus on matrix and calculus methods:

- Matrices to include Markov chains and linear programming (simplex)
- Calculus to include properties of probability distributions and their application in reliability engineering (MTTF), Laplace transforms. The relationship between Laplace and Markov chains will be reviewed.
- Network methods including reliability, Markov and probabilistic trees.

Applications in fire research will be reviewed.

Engineering Design Project

The Engineering Design Project module is designed to provide students with the opportunity to extend and demonstrate engineering design skills both as team members and as individuals. The project will enable students to develop their critical thinking, problem solving and key skills in application to a case study example using appropriate tools of analysis and communication. The module acts as the vehicle for integrating the study themes of design, ICT and technology, in a practical context.

Engineering Dissertation

This module aims to:

- provide the students with the opportunity to develop independent research and evaluation skills. On an individual basis the student will be required to carry out an in-depth study involving theoretical, computational, experimental or investigative analysis, or a combination of these.
- enhance students' employability skills such as written communication skills, independent planning, execution and dissemination of research outcomes, through the learning and teaching strategy.

Administration

The programme is administered by CityU SCOPE and is closely monitored and reviewed by UCLan. Lectures will be delivered by local academics and practitioners in the field.

- Programme Leader (UK) :
Prof. Andrei Chamchine, International Collaborative Provisions Lead, School of Engineering, UCLan (PhD, MEng, CEng and MEI).
- Programme Leader (HK) : Ir. Dr. Alexander Ng, SCOPE, CityU (PhD, MSc(FSE), BEng(Hons) FireE, MHKIE, FIFireE, Member of SFPE).
- Associate Programme Leader (HK) :
Mr. Thomas Wong, SCOPE, CityU (BEAM Pro).
- Associate Programme Leader (HK):
Ir Dr. Albert Yau, SCOPE, CityU (RPE, MHKIE, CEng, MIFireE, CPEng, MIEAust).

Continuing Education Fund (CEF)

Below modules are included in the list of reimbursable courses under the Government's Continuing Education Fund (CEF). This programme of the below modules are recognised under the Qualifications Framework (QF Level 5). For application details, please refer to the website of the Office of CEF at www.wfsfaa.gov.hk/cef/intro.htm.

- 36Z109028 Introduction to Combustion and Fire
- 36Z109036 Engineering Design Practice
- 36Z109044 Energy Transfer and Thermodynamics
- 36Z109052 Fire and Built Environment
- 36Z109060 Computational Engineering
- 36Z109079 Engineering Analysis 2
- 36Z109087 Enclosure Fire Dynamics
- 36Z109095 Probabilistic Risk Analysis
- 36Z109109 Fire Protection Engineering

Medium of Instruction

English

Assessment

Module assessment comprises coursework and / or an examination. To complete and obtain credits for a module, students must undertake all required elements and achieve a mark of at least 40%.

Delivery and Venue

The Universities have been monitoring the development of the pandemic closely since 2020 and the modes/schedules/methods of teaching and assessment arrangements may be changed subject to the prevailing government policies and university regulations

Modules are arranged on weekday evenings and/ or Saturday afternoons. Classes will mainly take place in SCOPE Tsim Sha Tsui East Learning Centre and teaching venues at Kowloon Tong.

Important Notes for applying IFE discounts

1) The 5% of IFE discounts are only applicable for non-CEF reimbursable modules (i.e. NOT applicable for CEF reimbursable modules). You can refer to the website at www.cityu.edu.hk/ce/fire for the list of CEF reimbursable and non-CEF reimbursable modules of your programme.

2) Students who wish to apply for 5 % discount on the non-CEF reimbursable modules from the first instalment of 2022-2023 have to submit a copy of valid proof of IFE membership to Miss Leung at fire.scope@cityu.edu.hk on or before 24 June 2022. Submission of valid proof of IFE membership during the period of 25 June 2022 to 31 October 2022 will fall into the final round process with discount effective starting from the second instalment of 2022-2023. All submission of valid proof of IFE membership after 31 October 2022 will not be handled.

Extended Non-means-tested Loan Scheme (ENLS)

Successful applicants are eligible to apply for the Extended Non-means-tested Loan Scheme (ENLS) administered by the Student Finance Office (SFO) of the HKSAR Government. The maximum financial assistance under the ENLS is equivalent to the total tuition fees payable of the programme. For details or enquiries please contact 2150 6223 or visit the Government website www.wfsfaa.gov.hk.



Program Commencement

September 2022

Application Deadline

Second Round Application Deadline: 13 May 2022 (Fri)

All applications will be processed on a rolling and competitive basis and application may close earlier than the original deadline if all available places have been filled. Therefore, early enrolment from interested parties are highly encouraged. The whole process and selection outcome will be endorsed UCLan. All decisions will be final.

Admission Requirements

There are 3 entry points for eligible applicants with different qualifications:

Route 1 (students have to complete 180 credits in 2 years)

- Applicants should possess a Foundation Degree in Science in Fire Safety Engineering (or equivalent qualification)

Route 2 (students have to complete 230 credits in 2 years)

- Higher Diploma (HD) / Associate Degree (AD) / Higher National Diploma (HND (or equivalent qualification) in relevant disciplines, such as building services and mechanical engineering with mathematics courses studied; or
- Higher Diploma (HD) in a relevant discipline (other than the above listed), who can demonstrate competence in mathematics and have a minimum of 3 years experience in a relevant profession. The applicant will be invited to attend an interview.

Route 3 (students have to complete 360 credits in 3 years)

- Level 3 or above in HKDSE Chinese and English; and Level 2 or above in Mathematics, Liberal Studies and an elective subject; or
- Grade E or above in 2 HKALE subjects (or 1 HKALE and 2 HKALE AS subjects) and grade E or above in both AS Use of English and AS Chinese Language and Culture; or
- UCAS 280 points including Maths and a Science/Technology subject at A2 or AVCE, plus 5 GCSE's including Maths and English at C; or
- A Higher National Certificate (HNC) in a relevant discipline, such as building services and mechanical engineering with mathematics courses studied; or
- A corporate membership of The Institution of Fire Engineers;

Programme Fee

- HK\$248,400* for Route 3 (360 credit), payable in 9 instalments.
- HK\$158,700* for Route 2 (230 credit), payable in 6 instalments.
- HK\$ 124,200* for Route 1 (180 credit), payable in 6 instalments.

* Additional fees will be charged in the case of retaking. All fees paid are non-refundable.

Application Fee

HK\$160 to be paid on application.

Mature applicants of at least 21 years of age, who have relevant work experience and commensurate background in mathematics and engineering, will be invited to attend interview and written test.

Applicants whose qualifications were not taught and assessed in English may be required to demonstrate their English proficiency as equivalent to IELTS 6.0.

Online Enquiries of Application Status

An acknowledgement of your application will be sent to you via email. Confirmation of application can also be made at our website: www.scope.edu/trackstatus 7 working days after submission of your application form.

How to Apply

1. Application should be submitted online via www.scope.edu/eapplication.
2. Application form can be obtained upon request from the reception counter of CityU SCOPE.
3. All copies of academic transcripts / certificates (including the academic qualifications stated on the admission requirement and HKALE/ HKCEE/ HKDSE result) must be submitted at the time of application. Incomplete application will cause a delay in processing.
4. Applicants will be selected on the basis of the academic merits and relevant work experience. All applicants will be informed of the application results. Please contact us if you do not receive our decision by early August 2022.

Enquiries

School of Continuing and Professional Education

Location : 2410, 2/F, Li Dak Sum Yip Yio Chin Academic Building (LI), City University of Hong Kong

Tel : 3442 5487 / 3442 7423

Fax : 3104 0514

Email : fire.scope@cityu.edu.hk

Website : www.cityu.edu.hk/ce/fire

* Details in this publication are accurate at the time of printing but subject to revision in the future.

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