



LUND
UNIVERSITY

MSc in Fire Safety Engineering

ERASMUS MUNDUS JOINT MASTER'S DEGREE

- Master of Science in Fire Safety Technology
- 2 years, full-time, 120 ECTS credits
- European joint Master's programme
- Lund University, Ghent University, The University of Edinburgh, Polytechnic University of Catalonia
- Application deadline: www.imfse.be
- Programme start: See www.imfse.be

PROGRAMME OVERVIEW

The International Master of Science in Fire Safety Engineering (IMFSE) is a two-year educational programme in the Erasmus+ framework. This Master's programme is organised jointly by:

- Ghent University, Belgium (coordinator)
- Lund University, Sweden
- The University of Edinburgh, UK
- Polytechnic University of Catalonia, Barcelona, Spain

These four leading European research universities with complementary expertise in the field of fire safety engineering (FSE) join together with the main objective of creating an educational programme that defines the required knowledge for a professional fire safety engineer, capable of developing a Performance Based Design (PBD). The four IMFSE universities are leading European institutions in the field of fire safety, providing both educational programmes and high-level research. Ghent aims at general FSE, Lund is recognised in enclosure fire dynamics, CFD modelling, human behaviour during fires and evacuation, as well as methods for risk assessment, and Barcelona is specialised in wildfires and industrial fire protection. Edinburgh is the developer of the first curriculum in structural fire safety engineering.

The consortium has four associated partners: ETH Zürich, Switzerland, The University of Queensland, Australia, University of Science and Technology, China and the University of Maryland, USA.

IMFSE also involves 13 industrial partners as official scholarship contributors. With their annual financial contributions and EU support, it has been possible to create the 'Sponsorship Consortium', which awards IMFSE students full or partial scholarships.

The IMFSE programme consists of four semesters of 30 ECTS credits each. The mobility structure, with possible change in

study location after each semester, gives the students the opportunity to gain from the strengths and expertise of each of the four universities.

The classes in the first semester can be attended in Ghent or Edinburgh. All students spend the second semester in Lund. In the third semester, classes are taught in Ghent or Barcelona. The fourth semester is devoted to the Master's thesis, hosted by one of the four institutes or associate partners and is often performed in collaboration with one of the programme's industrial partners.

FIRE SAFETY ENGINEERING

Fire safety engineering is a multidisciplinary field that requires a deep understanding of building design and construction, the thermo-chemical processes associated to fire growth, human behaviour and the representation of the many uncertainties through risk assessments. A fire safety engineer fulfils a broad range of duties, all related to fire safety. This can range from designing fire protection for a space station to ensuring that the occupants of buildings are safe from fire. Fire safety engineers have always been in great demand by industry, insurance companies, rescue services, educational institutions, consulting firms and government bodies around the world.

The major educational objectives of the Master's Programme in FSE are that graduates:

- are able to critically evaluate and construct original, performance-based, fire safe designs;
- understand the complexity and evolution of design tools, and the limitations of current understanding;
- understand the current research trends and are able to subsequently perform scientific (PhD level) research in the domain of FSE;
- have gained an awareness of the professional context and the current challenges in FSE;
- are able to make assessments in the field of FSE, taking into account relevant scientific, social and ethical aspects, and demonstrate an awareness of ethical aspects of research and development;
- are able to clearly present and discuss conclusions and the knowledge and arguments behind them, in dialogue



“I love this programme. The courses I have taken so far really prepare you as a fire safety engineer. I have been exposed to so many different topics. The study environment at Lund University is special. The teachers are always open to helping you out if you ask for assistance.”

Rohan John Baptiste from Saint Lucia



with different groups, orally and in writing, in national and international contexts.

The detailed educational objectives of the Master's Programme in FSE are that graduates can master and apply:

- knowledge of physics, chemistry, thermodynamics, heat and mass transfer to critically analyse and evaluate the development of fires in enclosures;
- knowledge of element methods and dynamics of structures to critically analyse and evaluate the behaviour of simple structures in case of fire;
- knowledge of wildland and wildland-urban-interface fire dynamics
- knowledge of explosions to critically analyse and evaluate the associated hazard;
- the advanced knowledge of fire dynamics, risk assessment, human behaviour, passive/active fire protection and integrate this to develop a performance based fire safety design;
- critical insight in existing fire safety legislation and regulations in the development of a fire safety design.

PROGRAMME MODULES/COURSES

Courses and number of ECTS Credits:

Semester 1 (mobility track 1), Ghent University: Fire Science Laboratory (10), Fire Safety Engineering (5), Fire Science and Fire Dynamics (5), Structural Design for Fire (5), Research Methods for Engineers (5)

Semester 1 (mobility track 2), University of Edinburgh: Fire Science and Fire Dynamics (9), Fire Safety Engineering (6), Fire Safety, Engineering and Society (9) and elective courses (6).

Semester 2, Lund University: Risk Assessment (8), Advanced Fire Dynamics (9), Human Behaviour in Fire (8), Simulation of Fires in Enclosures (5).

Semester 3 (mobility track 1), Ghent University: Active Fire Protection I: Detection and Suppression (6), Active Fire Protection II: Smoke and Heat Control (6), Fire Safety and Legislation (3), Passive Fire Protection (3), Performance-Based Design (6) and Structural Fire Engineering elective courses (6).

Semester 3 (mobility track 2) Polytechnic University of Catalonia: Wildland Fire Behaviour and Modelling (6), Risk and Vulnerability at the Wildland-Urban Interface (6), Advanced Fire Safety Engineering (6), Risk and Safety at the Chemical Industry (6), and elective courses (6).

Semester 4: Master's thesis (30).

CAREER PROSPECTS

A fire safety engineer fulfills a broad range of duties, in various ways related to fire. This can range from designing fire protection for a space station, to protecting treasures such as the U.S. Constitution, to safely securing the occupants of a high-rise building from fire hazards. Fire protection engineers are in great demand by corporations, educational institutions, consulting firms, and government bodies around the world. In the most recent alumni survey (January 2018), the vast majority of the IMFSE alumni indicated that they found a job in a few months after their graduation. Nearly 70% even indicated that they found a job before their graduation.

ENTRY REQUIREMENTS AND HOW TO APPLY

Entry requirements

A Bachelor's degree or recognised equivalent from an accredited institution (minimum 3 years full-time study or 180 ECTS credits) in civil, structural, mechanical, electrical, chemical or industrial engineering, material sciences, chemistry, physics, applied physics, architecture, urbanism and spatial planning, or a related discipline. Students in their last year of such a Bachelor's programme will also be considered. Sufficient English language proficiency is also an admission requirement.

See www.imfse.be for detailed information about the entry requirements.

How to apply

See www.imfse.be for detailed application instructions, application forms and deadlines.

Tuition fees

See www.imfse.be for details on tuition fees and scholarships.

CONTACT

Programme webpage:

www.imfse.be



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Lund University was founded in 1666 and is repeatedly ranked among the world's top universities. The University has around 45 000 students and more than 8 000 staff based in Lund, Helsingborg and Malmö. We are united in our efforts to understand, explain and improve our world and the human condition.

Learn more at www.lunduniversity.lu.se



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