



**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
- Application deadline: [www.imfse.be](http://www.imfse.be)
- Programme start: See [www.imfse.be](http://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

These three 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 three 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, and methods for risk assessment, and Edinburgh is the developer of the first curriculum in structural fire safety engineering.

The consortium has three associated partners: ETH Zürich, Switzerland, The University of Queensland, Australia and the University of Maryland, USA.

IMFSE also involves 15 industrial partners as official sponsors. 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 three 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 again taught in Ghent (for general FSE) or Edinburgh (with focus on structural engineering in the context of FSE). The fourth semester is devoted to the Master's thesis, hosted by one of the three institutes or associate partners and is often performed in collaboration with one of the programme sponsors.

## 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 are that the Master's students in FSE:

- are able to critically evaluate and construct an original, performance-based, fire safety design
- understand the complexity and evolution of the design tools and the many existing gaps of knowledge and limitations
- understand the current research trends and are able to subsequently perform scientific (PhD level) research in the domain of FSE
- gain an awareness of the professional context and the broad problems in FSE

### The detailed educational objectives of this course are that the Master's students in FSE:

- can evaluate and make a motivated choice of different types of fire detection and suppression (passive and active) and develop a quantitative performance assessment
- can identify structural weaknesses in fire and provide a quantitative assessment of performance



"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





- can make detailed risk analyses
- can establish quantitative egress patterns in case of fire
- have knowledge on national and international (especially European) regulation
- can collaborate with FSE colleagues

## Programme modules/courses

### COURSES AND NUMBER OF ECTS CREDITS:

- **Semester 1 (mobility track 1), Ghent University:** Fire Dynamics (6 ECTS credits), Thermodynamics, Heat and Mass Transfer (6), Explosions and Industrial Fire Safety (6), Material Behaviour at Ambient and Elevated Temperatures (3), Fire Research Seminar (3) and elective courses (6).
- **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 elective courses (6).
- **Semester 3 (mobility track 2), University of Edinburgh:** Fire Science Laboratory (9), Structural Design for Fire (6), Fire Investigation and Failure Analysis (9) and elective courses (6).
- **Semester 4:** Master's thesis (30). Can be performed at the associated partners or at other universities, industry or research institutes.

## 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](http://www.imfse.be) for detailed information about the entry requirements.

### HOW TO APPLY

See [www.imfse.be](http://www.imfse.be) for detailed application instructions, application forms and deadlines.

### TUITION FEES

See [www.imfse.be](http://www.imfse.be) for details on tuition fees and scholarships.

## About Lund University

Lund University was founded in 1666 and is repeatedly ranked among the world's top 100 universities. The University has 40 000 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.

Lund is the most popular study location in Sweden. The University offers one of the broadest ranges of degree programmes and courses in Scandinavia, based on cross-disciplinary and cutting-edge research. Because of its wide disciplinary range, interdisciplinary collaborations and engagement with wider society, Lund University is particularly well equipped to meet complex societal challenges. With partner universities in around 70 countries, the University's profile is distinctly international.

Learn more at [www.lunduniversity.lu.se](http://www.lunduniversity.lu.se)

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