

## Mons: from mining to creative technologies

The picturesque city of Mons, European Capital of Culture in 2015, welcomes you during this summer 2022 for an outstanding international experience, at the crossroad of different influences from northern and southern cultures.

Enjoy visiting UNESCO World Heritage sites: the neolithic flint mines, the baroque-style belfry and the major mining site of Grand-Hornu built in the early 19th Industrial Revolution.

But Mons is a city of the 21st century with a remarkable cultural and economic growth: Google set up its European centre nearby and attracted other companies working in digital innovation. The University of Mons is engaged in this regional development. The aim is not "technology for technology's sake", but aims to break down the barriers between different generations and social profiles. You will certainly enjoy this exciting week in Mons!

## The Faculty of Engineering...

The Faculty of Engineering has been training engineers since 1837 and awards engineering degrees (Bachelor, Master, PhD) in six different fields of engineering:

Architecture, Chemistry & Materials, Computer & Management, Electricity, Mechanics, Mining and Geology.

Our students are eager to transfer the knowledge they have acquired into real engineering skills by solving real-life design problems.

It plays today a leading role in the scientific and economical role of its region, namely with the local research centres Materia Nova and Multitel.



## LOCATION

Faculté Polytechnique de Mons  
Rue de Houdain 9 – 7000 Mons – Belgium

## ACCOMMODATION

Accommodation (including breakfast and lunch) in student halls of residence is included in the "all-inclusive" formula. Accommodation is available from Sunday, July 3 to Monday 11 July.

## REGISTRATION

The application deadline is 2<sup>nd</sup> June 2022

Number of participants is limited. Early applications will have priority. You will receive a confirmation so you can book your trip.

## FEES

■ 1250 €

*Travel expenses are not included*

## CONTACT

summer.polytech@umons.ac.be



A detailed and updated program of the activities is available on [www.umons.ac.be/polytech/summercourses](http://www.umons.ac.be/polytech/summercourses)

# INTERNATIONAL SUMMER COURSE IN ENGINEERING

**3 - 10 July 2022**  
Faculty of Engineering  
Mons – Belgium



**Summer Materials Break**  
Knowledge, analysis and  
prevention of materials failure

**UMONS**  
Université de Mons

**POLYTECH  
MONS**



## About our summer course :

This summer course is intended to give opportunity to non-specialized students to develop their knowledge and skills in the field of mechanical properties and failure of materials, from basic knowledge to prediction.

This is planned as a 10 days session offering high quality academic courses with lectures, plant visit, practical workshops and a technical workshop with top industrial speakers.

The program will also include cultural events and social activities in or close to Mons, a day tour to Brussels organized with local students, with whom the participants will interact daily.

A welcome evening with the staff members and students of the Engineering Faculty of Mons is scheduled on Wednesday, June 30th.

## Our student committee...

Our committee, "the Polytech International Mons'ters", is composed by students from second Bachelor to second Master. With our involvement in those summer courses we aspire to help our Faculty to expand its international standing.

Moreover, we will focus on the social aspects of this event by ensuring you will have an awesome experience in Mons.

We will be proud to share with you our scientific knowledge, cultural patrimony and good addresses in Mons to enjoy your stay. We will also organize some activities to discover our town and relax after a day at school.

*Let us make this Summer Course an amazing experience!*



## Summer Materials Break

### Knowledge, analysis and prevention of materials failure

**Fields of activity:** Materials characterization, Materials mechanics, Failure analysis, Non-destructive testing, Metallography, Reliability and reliability-centred maintenance.

**Learning objectives:** Understand why and how materials fail under mechanical solicitations and how to prevent this by using non-destructive testing and reliability-based maintenance.

**Targeted audience:** Students in Bachelor's degree (second and third year) and Master's degree (First year) in engineering or related fields. 2 ECTS will be awarded under the condition of a positive evaluation at the end of the course. Participants are advised to check transferability to their home institution. Attendants should have at least B2 proficiency in English.

## Program

- |                     |   |
|---------------------|---|
| <b>Sun. 3</b>       | ► Welcome of participants   |
| <b>Mon. 4 // AM</b> | ► Introduction and welcome.<br>► Metallography and fractography – theoretical aspects. / V. Vitry |
| <b>Mon. 4 // PM</b> | ► Mechanical characterization of materials – theoretical part. / F. Delaunois                     |
| <b>Tue. 5 // AM</b> | ► Mechanical characterization of materials – practical workshop / F. Delaunois                    |
| <b>Tue. 5 // PM</b> | ► Metallography and fractography – practical workshop. / V. Vitry                                 |
| <b>Wed. 6 // AM</b> | ► From statistical failure data analysis to maintenance 4.0. / L. Equeter. P. Dehombreux          |
| <b>Wed. 6 // PM</b> | ► Mechanical failure modes:   |

Basic knowledge of the analytical treatment of fracture mechanisms / M. Gonon

► Summer School Formal Dinner with UMONS and FPMs officials and PIM's students.

**Thu. 7 // AM**

► Non-destructive testing methods and applications, including practical workshop / M. Gonon

**Thu. 7 // PM**

► Free time

**Fri. 8 // AM**

► Industrial workshop on practice of failure analysis in collaboration with the Failure Analysis Society and Polytech Mons Alumni – Main guest speaker : Mr Joe Epperson, Senior Metallurgist at the National Transportation Safety Board (USA), ASM Fellow.

**Fri. 8 // PM**

► Industrial workshop on practice of failure analysis in collaboration with the Failure Analysis Society (continued)

**Sat. 9 // AM**

► Evaluation  
► Closing ceremony with distribution of attendance certificates

**Sat. 9 // PM**

► Cultural program : visit of Mons

**Sun. 10 // AM**

► Optional cultural visit.  
► Departure from Mons

