Mons: from mining to creative technologies

The picturesque city of Mons, European Capital of Culture in 2015, welcomes you during this summer 2017 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

ALL-INCLUSIVE

Accommodation and meals (breakfast, lunch and dinner) are included for each participant. This accommodation is available from Saturday, July 1 to the Sunday, July 9.

REGISTRATION

The application deadline is May 12, 2017. Number of participants is limited. The early applications will have priority. You will receive a confirmation so you could book your trip. The detailed procedure of registration is available from the website.

FEES

- 300€ for students from partner institutions
- 600€ for other students

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

International Summer Courses of Engineering 2017

3 - 8 JULY

Faculty of Engineering Mons – Belgium

UMONS Université de Mons

POLYTECH MONS

About our summer courses…

These summer courses are intended to give an education opportunity to non-specialized students to develop their knowledge and skills in two specific fields :

- Chemical and environmental engineering
- Product design and rapid prototyping with FabLab resources.

These are planned in a one-week session offering high-quality, innovative academic courses with lectures, industrial visits, practical workshops...

You will also take part to cultural events and social activities in or near Mons, organized by students with whom you will interact daily.

A general welcome is scheduled on Sunday, July 2 in the evening.

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 week an amazing experience!

FabLab Mons: just make it!

Design and manufacture your project using the FabLab Mons digital fabrication tools.

- **Fields of activity:** Computer-aided design, 3D scanning, 3D printing, laser cutting/engraving, vinyl cutting.
- **Learning objectives:** This hands-on training course will allow students to experience the design and manufacturing of prototypes using advanced manufacturing techniques.
- **Targeted audience:** Bachelor's degree (BA2, BA3) and Master's degree (MA1). 2 ECTS credits will be awarded under the condition of a positive evaluation at the end of the course. We advise you to check that these credits are transferable to your home institution.

Mon 3 AM
- Welcome
- What is a FabLab? What are the goals? How are FabLabs used for education? */ E. FILIPPI*
- Basics of digital fabrication and 3D printing */ E. RIVIÈRE, F. DUCOBU*
- 2D design software training course */ CH. CHARIOT, A. DEMARBAIX*
- **Topics: make of your own T-shirt**
  Vinyl cutting training course */ CH. CHARIOT, A. DEMARBAIX*

Mon 3 PM
- **Topics: make of your own T-shirt (cont'd).**
  Workshop : design and fabricate your own T-shirt */ CH. CHARIOT, A. DEMARBAIX*

Tues 4 AM
- **Topics: 3D scanning and 3D printing**
  3D scanning training course */ CH. CHARIOT, A. DEMARBAIX*

Tues 4 PM
- **Topics: 3D scanning and 3D printing (cont'd)**
  3D scanning and printing workshop */ CH. CHARIOT, A. DEMARBAIX*

Wed 5 AM
- **Topics: laser cutting and engraving**
  Laser cutter training course */ CH. CHARIOT, A. DEMARBAIX*
  Laser cutting/engraving workshop */ CH. CHARIOT, A. DEMARBAIX*

Wed 5 PM
- **Topics: laser cutting/engraving workshop (cont'd)**
  Laser cutting/engraving workshop (cont'd) */ CH. CHARIOT, A. DEMARBAIX*
- Cultural activity

Thur 6 AM
- **Topics: computer-aided design**
  Solid Works training course */ CH. CHARIOT, A. DEMARBAIX*

Thur 6 PM
- **Topics: design and manufacture your own project**
  Workshop: Design your own project */ CH. CHARIOT, A. DEMARBAIX*

Fri 7 AM
- **Topics: design and manufacture your own project (cont'd)**
  Workshop: Fabricate your own project using the FabLab digital fabrication tools */ CH. CHARIOT, A. DEMARBAIX*

Fri 7 PM
- Free time

Sat 8 AM
- Presentation and evaluation of the projects */ E. FILIPPI, E. RIVIÈRE, F. DUCOBU, CH. CHARIOT, A. DEMARBAIX*
- Summer School Closing Ceremony and Farewell Party

Mitigation of human activities environmental effects

Application in the built environment, transport and industry

- **Fields of activity:** (bio-)chemical engineering processes, thermodynamics, material science, environmental science.
- **Learning objectives:** Understand today's challenges to meet environmental constraints in the built environment, transport and industry, through theoretical and practical aspects.
- **Targeted audience:** Bachelor's degree (BA2, BA3) and Master's degree (MA1). 2 ECTS credits will be awarded under the condition of a positive evaluation at the end of the course. We advise you to check that these credits are transferable to your home institution.

Mon 3 AM
- Welcome
- Introduction to the topics
- **Topics: Energy and buildings**
  Impact of the built environment on energy consumption and GHG emissions: Towards zero emission in 2050 */ M. FRÈRE*
- Energy demands in Buildings: Basics */ V. FELDHEIM*

Mon 3 PM
- **Topics: Energy and buildings**
  Energy systems in Buildings and city districts */ M. FRÈRE*
  Visit of a Zero Energy Building */ V. FELDHEIM*

Tues 4 AM
- **Topics: Industrial and urban liquid pollution**
  Industrial and urban wastewater treatment */ AL. HANTSON*

Tues 4 PM
- Labworks

Wed 5 AM
- **Topics: Energy and transport**
  Biofuels: from first to third generations */ AL. HANTSON, D. THOMAS*

Wed 5 PM
- Labworks
- Cultural activity

Thur 6 AM
- **Topics: Gaseous pollution and energy in industry**
  Various gas pollutions in the industry sector (power, cement, chemical plants, …): NOx, SOx, dust, … */ D. THOMAS*
  Focus on CO_2 capture technologies – Challenges */ L. DUBOIS*

Thur 6 PM
- Industrial Visit for illustration of environmental solutions: gas and liquid effluents, energy savings, recycling…

Fri 7 AM
- **Topics: Materials for Energy applications**
  New generations of PV cells */ A. DECROLY*
  Heat storage materials */ M. FRÈRE*

Fri 7 PM
- Free time

Sat 8 AM
- Evaluation */ M. FRÈRE, D. THOMAS*
- Summer School Closing Ceremony and Farewell Party