

## Mons: from mining to creative technologies

The picturesque city of Mons, European Capital of Culture in 2015, welcomes you during this summer 2016 for an outstanding international experience, at the crossroad of different influences from northern and southern cultures.

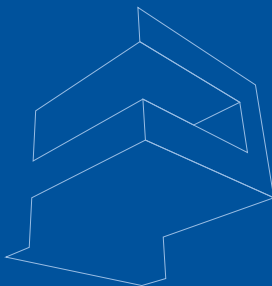
Enjoy visiting UNESCO World Heritage sites: the neolithic flint mines, the baroque-style belfry and the major mining site of Grand-Hornu built in the early 19<sup>th</sup> Industrial Revolution.

But Mons is a city of the 21<sup>st</sup> 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 2 to the Sunday, July 10.

### REGISTRATION

The application deadline is June 1, 2016. Number of participants is limited. Early applications will be favoured. You will receive a confirmation June 5 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](mailto: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 Courses of Engineering 2016

4 - 9 JULY

Faculty of Engineering  
Mons – Belgium



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**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 in two specific fields: creative programming with openFrameworks and geological raw materials.

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 3 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 aspect 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!



## Creative Programming with openFrameworks

Convert your creative ideas into real-time interactive applications and games with a free software framework specially designed for prototyping and exploration.

- **Fields of activity:** Software design, audiovisual applications, sensors, signal processing, game design, interaction.
- **Learning objectives:** Be able to convert a creative idea into a real prototype, with sensors, well-designed software and multimedia, both for desktop and mobile types of applications.
- **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 4 AM** ▶ Welcome
  - ▶ Presentation of the activities of the NUMEDIART Institute: from creativity to innovation / *T. DUTOIT*
  - ▶ Intro to openFrameworks (oF) and installation of oF environment on participants' laptop / *N. D'ALESSANDRO, J. TILMANNE*
- Mon 4 PM** ▶ Draw, animate, and control in 2D and 3D / *N. D'ALESSANDRO*
  - ▶ Multithread design and memory management / *N. D'ALESSANDRO*
- Tues 5 AM** ▶ Using external software libraries: motion capture, sound synthesis / *N. D'ALESSANDRO*
  - ▶ Software “glueing”: fast prototyping using OSC messaging / *N. D'ALESSANDRO*
- Tues 5 PM** ▶ Introduction to Motion capture and motion understanding / *J. TILMANNE*
- Wed 6 AM** ▶ Introduction to complex audiovisual applications / *N. D'ALESSANDRO*
  - ▶ Introduction to interaction design and mapping / *N. D'ALESSANDRO*
- Wed 6 PM** ▶ Design your personal project / *N. D'ALESSANDRO, J. TILMANNE*
  - ▶ Cultural activity on the Grand-Hornu site (UNESCO World Heritage): visit of the Museum of Contemporary Arts – MAC's and dinner
- Thur 7 AM** ▶ Design your personal project / *N. D'ALESSANDRO, J. TILMANNE*
- Thur 7 PM** ▶ Implement your personal project in oF / *N. D'ALESSANDRO, J. TILMANNE*
- Fri 8 AM** ▶ Implement your personal project in oF / *N. D'ALESSANDRO, J. TILMANNE*
- Fri 8 PM** ▶ Free time
- Sat 9 AM** ▶ Presentation of personal projects by participants, and evaluation
- Sat 9 AM** ▶ Summer School Closing Ceremony and Farewell Party

### Scientific Advisor:

Prof. Thierry Dutoit – [thierry.dutoit@umons.ac.be](mailto:thierry.dutoit@umons.ac.be)

## Geological Raw Materials

Raw materials (rocks, minerals, metals) are essential for modern life, from civil engineering to new technologies. Increasing demand from emerging countries and environmental concerns lead to new challenges for engineers in mining and geology.

- **Fields of activity:** Applied geology, geological and geophysical prospection of raw mineral materials, mining, rock mechanics, mineral processing, hydrogeology and reservoir engineering
- **Learning objectives:** Understand today's challenges to meet environmental and societal constraints when mining mineral resources. Practice modern techniques in mining engineering and associated activities.
- **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 4 AM** ▶ Welcome
  - ▶ Raw material new challenges / *P. ANCIA, J.-P. TSHIBANGU*
  - ▶ Geology in a nutshell / *J.-M. BAELE*
- Mon 4 PM** ▶ Visit of a quarry in the Tournai Basin
- Tues 5 AM** ▶ Structural geology / *S. VANDYCKE*
  - ▶ Mine planning and optimization / *J.-P. TSHIBANGU*
- Tues 5 PM** ▶ Hands-on introduction to geophysical prospecting (fieldwork) / *O. KAUFMANN*
- Wed 6 AM** ▶ Mineral processing challenges / *P. ANCIA*
  - ▶ Physical characterisation of rock materials / *J.-P. TSHIBANGU*
- Wed 6 PM** ▶ Rock mechanics and mineral processing (labwork)
  - ▶ Cultural activity on the Grand- Hornu site (UNESCO World Heritage): visit of the Museum of Contemporary Arts – MAC's and dinner
- Thur 7 AM** ▶ Hydrogeology / *P. GODERNIAUX*
  - ▶ Impacts of engineering activities on underground waters / *P. GODERNIAUX*
- Thur 7 PM** ▶ Visit of an underground laboratory for the storage of radioactive waste (CEN-Mol)
- Fri 8 AM** ▶ Conference on the I2Mine research project (Innovative Technologies and Concepts for the Intelligent Deep Mine of the Future)
- Fri 8 PM** ▶ Free time
- Sat 9 AM** ▶ Evaluation
- Sat 9 AM** ▶ Summer School Closing Ceremony and Farewell Party

### Scientific Advisors:

Prof. Philippe Ancia – [philippe.ancia@umons.ac.be](mailto:philippe.ancia@umons.ac.be)

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