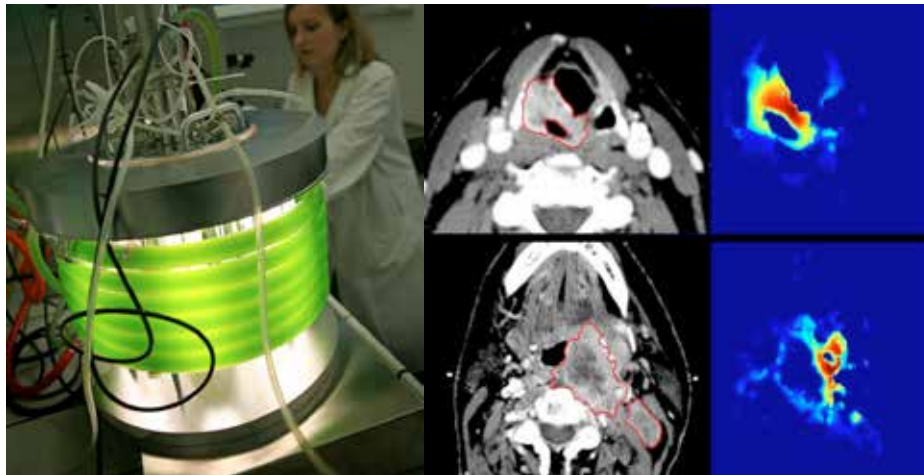


About the Faculty of Engineering of UMONS and its BIOSYS research group

The BIOSYS research group (www.umons.ac.be/biosys) of the Faculty of Engineering of UMONS is an R&D Excellence group is, broadly speaking, active in scientific and engineering aspects of Life Sciences including biosignal and image processing, bio-chemical system analysis and bioprocess modelling, optimisation and control, ecology and environment, as well as bio-mechanics and bio-optics. Several university laboratories (active in chemical and biochemical engineering, mechanical engineering, signal processing, control, computer science, mathematics and telecommunications) participate in this research group.

Founded in 1837, the Faculté Polytechnique de Mons (FPMs) is the oldest engineering faculty in Belgium. It is a member of the T.I.M.E. Network (Top Industrial Managers for Europe: www.time-association.org), which brings together the most prestigious engineering schools in Europe. Every year, the Faculty of Engineering sees about 150 Master students graduate in Architectural Engineering, Chemical and Materials Engineering, Computer and Management Engineering, Electrical Engineering, Mechanical Engineering and Geology and Mining Engineering.



For more academic information, please contact:

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UMONS Registration and Admissions Office:

17 Place Warocqué – 7000 Mons, Belgium
service.inscriptions@umons.ac.be

UMONS International Office:

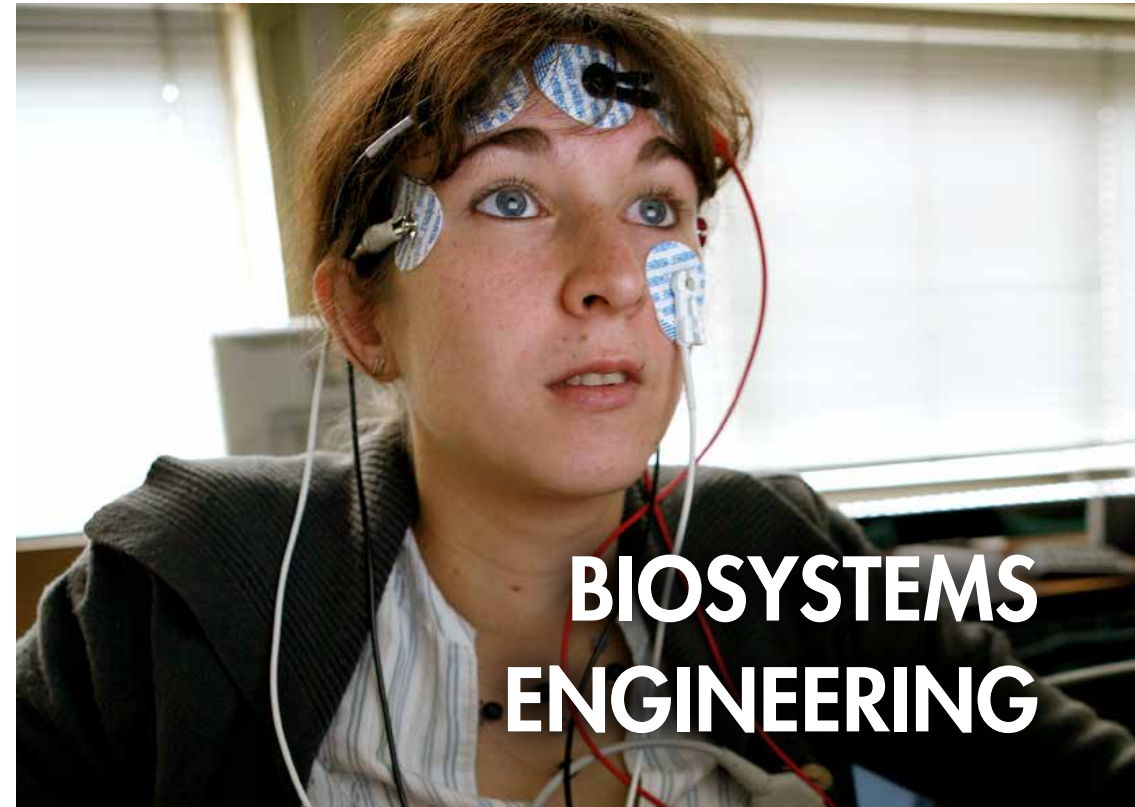
20 Place du Parc – 7000 Mons, Belgium
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For more information, please consult our website: www.umons.ac.be/biosys

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University of Mons



BIOSYSTEMS ENGINEERING

UMONS
University of Mons

**POLYTECH
MONS**



**POLYTECH
MONS**

**MASTER OF SCIENCE
IN ELECTRICAL ENGINEERING,
SPECIALISING IN BIOSYSTEMS ENGINEERING**

SPECIALISED MASTER'S DEGREE IN BIOSYSTEMS ENGINEERING (BIOENG)

Duration

1 year

Target

BIOENG specifically addresses students who already possess a Master's degree in Electrical Engineering or Bio-Chemical Engineering, and who are willing to obtain a Belgian Master's degree specialising in signal processing, system analysis and control with applications in biomedical and bioprocess engineering.

BIOENG graduates have privileged access to PhD programmes (specific grants are available at the Faculty of Engineering of UMONS).

Admission is restricted to 20 students per year.

Degree awarded

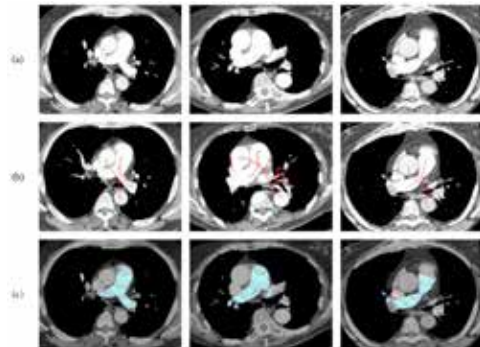
Master of Science in Electrical Engineering, specialising in Biosystems Engineering.

Programme description

BIOENG is a specialised Master's degree in Biosystems Engineering, which focuses on methods and techniques for measurement, signal processing, system modelling, optimisation and control with applications in medical signal and image processing, as well as process applications in the bio industry, including red, green and white biotech. This course is offered by the Faculty of Engineering of UMONS (www.umons.ac.be/polytech).

The BIOENG course programme is organised over 1 year and is composed of 60 ECTS credits. The key terms of this programme are "signals", "systems" and "control" as well as "biomedical engineering" and "bioprocess applications". The programme spans various domains including biomedical signal and image processing, bioinformatics, population and biological system modelling, hardware and software instrumentation, advanced control strategies for biomedical and bioprocess applications, and technological introduction in various processes related to human health, the environment, food and renewable energy.

The BIOENG programme offers a series of seminars and involves completing two projects and undertaking a Master thesis (during the spring term), all under expert supervision. Students can also choose some optional introductory courses, depending on their previous educational background, in either systems and control or in bioprocess engineering. Alternatively, language courses (including a special French course for beginners) can be attended. All courses are taught in English.



| Course | Prof. | ECTS | Semester |
|--|-----------------------------|-----------|----------|
| Biomed & BioTech Instrumentation | C. Renotte | 2 | 1 |
| Biomedical Signal Processing | T. Dutoit | 3 | 1 |
| Optimal Estimation and Control with Applications in Bioengineering Systems | A. Vande Wouwer | 3 | 1 |
| Population Models & Bioprocess Modelling | A. Vande Wouwer | 5 | 1 |
| Biotechnological Modelling and Automation Project | A. Vande Wouwer | 5 | 1 |
| Biomedical Signal Processing Project | B. Gosselin, T. Dutoit | 4 | 2 |
| Advanced Control | A. Vande Wouwer, C. Renotte | 4 | 2 |
| Bioinformatics | D. Gillis, A. Vande Wouwer | 2 | 2 |
| Medical Image Processing & Analysis | B. Gosselin, M. Mancas | 4 | 2 |
| Project in Dynamic Simulation of Biosystems | A. Vande Wouwer, P. Saucez | 2 | 2 |
| French (choice of courses in French, including "French for Beginners") | | 5 | 1 |
| Master Thesis | | 21 | 1 & 2 |
| TOTAL | | 60 | |

Admission

To enrol on the BIOENG course, applicants should already possess a Master's degree in Electrical Engineering, Bioengineering or Chemical Engineering.

Applicants should fill in an admission form and post it to the Admissions Office, together with a copy of all degree certificates, transcripts of results and a covering letter in English.

Before approval, applications will be examined by the faculty committee, based on the student's educational background, reasons for applying, and knowledge of English (e.g. TOEIC/TOEFL grades).

The BIOENG programme is also available to Erasmus students who are willing to complete the last year of their Master's degree in Belgium. Students applying for an Erasmus exchange should be in the last year of their Master's degree programme in Electrical Engineering, Bioengineering or Chemical Engineering, and should be students of a European university which has an Erasmus agreement with the Faculty of Engineering. They will not receive their Master's degree from the Faculty of Engineering; instead, their Master's degree will be awarded by their institution of origin.