



**THE BRUSSELS-MONS  
INSTITUTE OF ENGINEERING**

**INTERNATIONAL MASTERS  
IN THE HEART OF EUROPE!**

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## THE BRUSSELS ALLIANCE FOR RESEARCH AND HIGHER EDUCATION : **A LONG TRADITION OF EXCELLENCE**

- Université Libre de Bruxelles : a major research centre in a multicultural institution
- Université de Mons : an important international actor and a university on a human scale
- ULB and UMONS : very close partners

## THE BRUSSELS-MONS INSTITUTE OF ENGINEERING: **NEW IMPULSE TO RESEARCH AND EDUCATION**

- Research and Development : a leading strength
- Education : a one-year high level international masters

## PROGRAMMES

- Telemedia : telecommunications and multimedia
- Computational Intelligence
- Materials science
- Biosys : Biosystems Engineering

## HOW TO APPLY

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THE BRUSSELS ALLIANCE FOR  
RESEARCH AND HIGHER EDUCATION :  
**A LONG TRADITION OF  
EXCELLENCE**

Conscious of the leading role universities have to play in the construction of the European space of knowledge and research, the [Université Libre de Bruxelles \(ULB\)](#) and the [Université de Mons \(UMONS\)](#) are committed to sharing their competences and resources within the Brussels Alliance for Research and Higher Education.

Two of Belgium's most prestigious faculties of engineering, the FPMs (Faculty of Engineering, Mons) and Brussels Faculty of Applied Sciences, have pooled together their knowledge and experience, built on a long tradition of excellence, to create **the Brussels-Mons Institute of Engineering.**



## • Université Libre de Bruxelles

Founded on the principle of Free Inquiry, which advocates independent reasoning and the rejection of dogma in all its forms, the ULB has remained true to its original ideals –freedom from any form of control and a commitment to democratic and humanistic values, these principles also underlie ULB's form of governance. Its social, societal and scientific commitments are translated into a broad access to higher education combined with excellent quality research. With three Nobel Prize winners, a Fields medal, three Wolf Prizes for physics, two Marie Curie Prizes and 29% of the Francqui prizes, the university is a major research centre, recognised by the academic community worldwide.

The ULB, a multicultural institution with 7 faculties and a range of schools and institutes is a comprehensive university providing academic tuition in all disciplines and study cycles. The ULB also has a teaching hospital – the Hôpital Erasme, a specialist institute for studying cancer – the Institut Bordet and an extensive hospital network. With its 21,000 students, 27% of whom come from abroad, and its very cosmopolitan body of staff, it is an intrinsically international institution open to both Europe and to the whole world.

[www.ulb.ac.be](http://www.ulb.ac.be)

## • Université de Mons

The University of Mons was created in 2009 as the result of the voluntarily merger of two well-established Universities of the medieval town of Mons. UMONS is the biggest in the region and the excellent reputation of some of its faculties reaches far beyond the Belgian borders, with a thousand staff (professors, scientists, researchers, technical and administrative workers). It offers 40 degree course programmes to more than 5,000 students from about 40 different countries. Research is conducted at UMONS in 80 research units and 2 Centres of Excellence. An important international actor, with 150 international partners in more than 50 countries on the 5 continents, the University of Mons is proud to remain a University on a human scale.

[www.umons.ac.be](http://www.umons.ac.be)

## • Close partners

ULB and UMONS are not only very close partners in their vision of research and education, but also geographically. Brussels and Mons are less than 70 kms away from each other, and Mons lies at about 40 kms from Brussels South Charleroi Airport. Besides, as many people from Mons work in Brussels, the two cities enjoy very convenient commuting facilities (with at least 2 trains an hour outside peak hours).

## THE BRUSSELS-MONS INSTITUTE OF ENGINEERING NEW IMPULSE TO RESEARCH AND EDUCATION

### • Research and Development

The Brussels-Mons Institute of Engineering stimulates research and education, and represents a leading strength in R&D. It is organised in modern and competitive clusters (research groups) and research centres working on leading-edge research subjects, namely:

→ **The Information Technologies research group** is devoted to the collection, lay-out, transmission, processing and operation of information (data or signal).

→ **The Materials research group** focuses on Materials, from their conception to their use.

→ **The Energy research group** works on improving energetic efficiency and reducing CO<sub>2</sub> emissions.

→ **The Biological and Chemical Processes research group** is concerned with life sciences in general and more particularly on the engineering of biochemical systems and bioprocesses.

→ **The Biomedical Engineering research group** focuses on biomechanics, processing of biosignals, design of biosensors, image processing, etc.

→ **The Risks Management research group** develops tools for managing both natural risks and those linked to human activities, which may affect people, goods and facilities, economic activities or the environment

→ **The Environment and Life quality research group** carries out research in water treatment, noise analysis, ecodesign, etc.

→ **The Mechatronics research group** designs and manufactures mechanical and electromechanical systems

### • Education

The Institute of Engineering offers the possibility of completing one-year high level international masters. Indeed, students with a Master's Degree in Engineering **may apply to achieve these masters in one year** and obtain a second degree in this short period. Each programme description mentions the target participants.

Students who have just graduated with a BA in the field concerned and who are interested in completing these programmes immediately are offered the chance to do so. Only, they will have to enrol following the regular two-year scheme of study and be aware that part of the programme is taught in French. Of course, all the masters open naturally (but not exclusively) to PhD programmes. Course programmes are also accessible to Erasmus students willing to complete the last year of their Master's Degree in Belgium. Students applying for such an Erasmus exchange should be in the last year of a Master degree and should be a regular student at a European university having an Erasmus agreement with ULB or UMONS. They will not receive a Master's Degree (the Master degree will be delivered by their own university).

Please see below for a presentation of the different programmes that were designed in collaboration with research centres and academic partners so as to address the current scientific issues. These programmes were sometimes developed in partnership with other Departments or other Belgian leading universities. They are designed for home students as well as for foreign students having begun their study in a University abroad. **All courses are taught in English.** For some programmes, students can also choose elective courses in French (including, but not limited to, special French for Speakers of Other Languages course) and improve their French while studying in English.

**The Brussels-Mons  
Institute of Engineering:  
facts & figures**

2000 students at bachelor  
and master levels,  
300 PhD students  
300 Master's degrees  
delivered every year  
250 academic staff



## TELEMEDIA : Telecommunications and multimedia

### • Intro

The **TELEMEDIA** programme is designed for telecom and multimedia freaks willing to gain skills and knowledge in those applied fields. The degree is definitely an asset in leading sectors such as: satellites, phone services, cable broadcasting and telephony, multimedia applications, computer networks, data security, mobile phone and internet telecommunication technology.

### • Course programme

The **TELEMEDIA** course programme combines courses and project work (fall semester) as well as a Master thesis (spring semester), both under the supervision of an expert. It also offers a series of industrial seminars.

### • Target participant

**TELEMEDIA** specifically targets students with a Master's Degree in Electrical Engineering or Computer Science.

Admission is restricted to 20 students a year.

### • Location

Mons

### • Admission

The applicant should follow the procedure under "How to apply?". Applications will be examined by a faculty teaching committee for approval, based on the student's educational background, motivation, and knowledge of English (e.g., TOEIC or TOEFL scores).

### • Degree awarded

"Master of Science in Electrical Engineering, specialized in Telecommunications and Multimedia"

### • Special grants available!

The graduates from these Masters have a privileged access to PhD programmes of Académie Universitaire Wallonie-Bruxelles (specific grants available at ULB & UMONS) and to a wide range of engineering sectors as well as to industrial positions in Belgium. Beyond our passion for

Science, do you know what we share? We both truly care about your future!

### • About the MULTITEL R&D Centre

**MULTITEL** is an independent Research Centre in Multimedia and Telecommunications. It was founded in 1999 by The Faculty of Engineering, Mons, and is located in Mons, Belgium. It currently employs about 80 people, who work in multidisciplinary teams composed of engineers, technicians and marketing people. Its main goal is to develop and implement innovative projects in collaboration with local and international companies. Multitel's scientific fields include voice technology, data fusion, optics fibre applications, image processing and computer network management. Besides its R&D activities, Multitel is also active in the sectors of optics and telecommunications and in company computer networks.

→More information on [www.multitel.be](http://www.multitel.be)

### • About the NUMEDIART

The **Numediart** programme can be regarded as a good example of the various applications of this Master degree. Numediart is a multidisciplinary research programme. Its main goal is to develop new technologies for companies working in multimedia and digital sectors. It brings together researchers, industrialists and artists to work on 3 main themes:

- HyFORGE, deals with multimedia indexing enabling a "video DJ" to find specific files;
- CoMedia, aims at transforming the artist into a multimedia conductor;
- COPI, deals with digital instrument design which will free musicians from physical constraints inherent to the creation of sounds

→More information on [www.numediart.org](http://www.numediart.org)

### • Contacts

Contact for further information

**Mrs. Véronique Piette**

Faculté Polytechnique de Mons

Secretary of the Electrical Engineering Group

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[veronique.piette@fpms.ac.be](mailto:veronique.piette@fpms.ac.be)



## • Contents

COURSE	Teaching staff	ECTS
<b>Web Technology</b>	P. MANNEBACK	2
<b>Embedded Systems Design</b>	C. VALDERRAMA J. HANCO	3
<b>Applied Digital Processing</b>	T. DUTOIT J. HANCO	4
<b>Statistical Pattern Recognition</b>	B. GOSSELIN	3
<b>Information Processing</b>	B. GOSSELIN T. DUTOIT	2
<b>Advanced communication systems</b>	V. MOEYAERT M. WUILPART	7
<b>Photonic and advanced networks</b>	P. MEGRET M. WUILPART	8
<b>Telemedia Project</b> (e. g., Automatic Analysis of Recorded Speech Data, Handwritten documents automatic processing and many more...)	T. DUTOIT M. WUILPART	5
<b>French courses</b>	L. CHAINAYE	5
<b>Master Thesis</b>		21
<b>TOTAL</b>		<b>60</b>



## Computational Intelligence

### • Intro

Computational intelligence aims at upgrading our computers, through the use of artificial or collective intelligence, so that they are even more functional, user-friendly and discreet although they are omnipresent.

### • Course Programme

The programme covers the various state-of-the-art computing techniques such as collective intelligence or biomimetic systems. It allows to set up adaptative mechanisms able to adopt an intelligent behaviour in complex and dynamic environments.

### • Target participants

Master's Degree in Engineering, Computer and Management Sciences.

### • Location

Brussels

### • Admission

The applicant should follow the procedure under "How to apply?". Applications will be examined by a faculty teaching committee for approval, based on the student's educational background, motivation, and knowledge of English (e.g., TOEIC or TOEFL scores).

### • Degree awarded

"Master of Science in Computer Engineering, specialized in Computational Intelligence"

### • About IRIDIA

IRIDIA is the Artificial Intelligence research laboratory of the Université Libre de Bruxelles. It is involved in theoretical and applied research in computational intelligence.

Its major domains of competence are:

#### 1) **swarm intelligence**,

a research programme focusing on the design of algorithms or distributed problem-solving mechanisms using the collective behaviour of social insect colonies as main source of inspiration.

2) **metaheuristics** for solving combinatorial and continuous-space optimization problems,

3) the foundation study of **biological networks**, with a focus on the study of neural networks, immune networks and chemical reaction systems.

4) **business intelligence** applications, such as data mining and object-oriented solutions for companies and organizations...

→ More information on

<http://code.ulb.ac.be/iridia.home.php>

Information technology has been developing dramatically in the last decades and is now offering major prospects for engineers. As a specialist, the Engineer in Computer Science plays an essential role in this sector. Computational intelligence (CI) is an offshoot of **artificial intelligence**. As an alternative, it rather relies on heuristic algorithms used in **fuzzy systems**, **neural networks** and **evolutionary computation**. Computational intelligence also involves techniques that use **Swarm intelligence**, **Chaos Theory** and **Fractals**, **Artificial immune systems**... Computational intelligence combines elements of learning, adaptation, evolution and **Fuzzy logic** (rough sets) to create programmes that are, in some sense, **intelligent**. Computational intelligence research does not reject statistical methods, but often gives a complementary view (as it is the case with **fuzzy systems**). Artificial neural networks is a branch of computational intelligence that is closely related to machine learning.

Computational intelligence is associated with **soft computing**, **connectionist** systems and **cybernetics**. Let us not forget that there is a severe shortage of Information Technology specialists and this problem will still worsen in the next few years.

→ More information on [www.swarmanoid.org](http://www.swarmanoid.org)

### • Contacts

Contact for further information

**Faculty of Applied Sciences**

Tel.: +32 2 650 40 93

[polytech@admin.ulb.ac.be](mailto:polytech@admin.ulb.ac.be)

## • Contents

45 ECTS to be chosen among

COURSE	Teaching staff	ECTS
<b>Techniques of Artificial Intelligence</b>	A. NOWE H. BERSINI	6
<b>Decision Engineering</b>	Y. DESMET	4
<b>Heuristic Optimisation</b>	T. STUTZLE	4
<b>Swarm Intelligence</b>	M. BIRATTARI M. DORIGO	4
<b>Language as complex adaptive systems</b>	L. STEELS	6
<b>Mathematical background for complex systems science</b>	B. MANDERICK	6
<b>Research training artificial intelligence</b>	H. BERSINI	6
<b>Internship</b>		15
<b>Adaptive Systems</b>	B. MANDERICK	6
<b>Adaptive Systems Seminar</b>	B. MANDERICK	6
<b>Multiagent learning</b>	A. NOWE	6
<b>Multiagent learning seminar</b>	A. NOWE	6
<b>Logic and computer science</b>	S. SMETS	6
<b>Pattern recognition</b>	E. NYSSSEN	3
<b>Seminar in theoretical computer science I</b>	D. VERMEIR	6
<b>Seminar in theoretical computer science II</b>	D. VERMEIR	6
<b>Semiotic dynamics and emergent semantics</b>	L. STEELS	6
<b>Bioinformatics</b>	T. LENAERTS	6
<b>Dynamic processes</b>	P. L. KUNSCH P. VINCKE	2
<b>Statistical foundation of machine learning</b>	G. BONTEMPI	5
<b>Master thesis in Computer science</b>		15



## Materials

### • Intro

Numerous technologies are strongly dependent on the performances and properties of materials. Consequently, new advances in Materials Science are a driving force for economic growth and social welfare. As advanced technologies are becoming (or should become) available to everyone, it is evident that sustainable development is the only way to ensure an environment of quality for future generations. In this context, mastering the processing of materials through their entire life cycle and continuously enhancing their performance will play a crucial role. Prominent economy-driving industries like the automotive, aerospace, energy, microelectronics and chemical industries, and emerging sectors like nanotechnology, biomaterials and recycling are eager for qualified and talented people with a focus on materials.

The Académie Universitaire Wallonie-Bruxelles offers two Master's programmes in Materials Science, one dedicated more to the "**Processing and properties of materials**" (metals, ceramics and polymers) the other one, entitled "**From Design to Applications**", being a multidisciplinary, research-oriented approach.


**1**

### MATERIALS SCIENCE - PROCESSING AND PROPERTIES OF MATERIALS

In this Master's programme, we provide an insight into the most advanced materials processing methods and manufacturing techniques. The thermodynamic and kinetic driving forces that enable micro-structural engineering in advanced materials are introduced; and the links between the micro-structural features and the physical properties are explained. Special emphasis is put on nano-structured, biocompatible and bio-inspired materials.

### • Course Programme

The candidate will be required to follow a total of 40 credits from the subjects which must be chosen from the list of courses offered below. However, students will be allowed to choose 6 credits among the other courses offered by the Faculty of Applied Sciences.

Students will also prepare a Master Thesis (20 credits). Thesis subjects will be suggested by the different laboratories working in Materials Science.

### • Target participants

Candidates must own a Master's Degree in Engineering (any field) allowing candidates to understand the basic foundations in order to be able to follow the teaching programme

### • Location

Brussels

### • Admission

The applicant should follow the procedure under "How to apply?". Applications will be examined by a faculty teaching committee for approval, based on the student's educational background, motivation, and knowledge of English (e.g., TOEIC or TOEFL scores).

### • Degree awarded

"Master of Science in Chemical and Materials Engineering, specialized in Processing and Properties of Materials".

#### Upside down

Animals such as geckos, tree frogs ... can climb vertical walls and walk on ceilings. To perform such a feat, they attach their feet strongly but reversibly to a variety of surfaces (hydrophilic, hydrophobic, smooth or rough...). Understanding various factors like geometry, adsorbed water layers, composition or others makes it possible to synthesize new materials for robots or other structures that could get to hard-to-reach places.

### • Contacts

Contact for further information

**Faculty of Applied Sciences**

Tel.: +32 2 650 40 93

polytech@admin.ulb.ac.be

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## • Contents

40 ECTS to be chosen among

COURSE	Teaching staff	ECTS
Structural characterization of materials	M-P. DELPLANCKE	3
Metals : microstructure and characterization	S. GODET J. VERECKEN	4
Ceramics : microstructure and characterization	M-P. DELPLANCKE H. RAHIER	3
Surface physics and surface characterization	F. OGLETREE	3
Surface treatment : processing and analysis	L. SEGERS H. TERRYN	4
Processing of metals and ceramics	S. GODET H. TERRYN	4
Recycling of metals and secondary raw materials	L. SEGERS	4
Non destructive testing of materials	F. DUBOIS	2
Sustainability of materials	H. RAHIER J. VERECKEN	7
Polymer chemistry	Y. GEERTS	4
Polymers : properties and physical characterization	B. VAN MELE	4
Polymers : rheology and processing	J. LEBLANC-V. LEO B. VAN MELE	4
Biocompatible materials	S. GODET	2
Nanostructured materials	S. GODET J.-M. LEFEBVRE	3
Nanochemistry & nanotechnology: capita selecta	B. VAN MELE G. DESMET	4
Master thesis in Computer science	N. CERF	20

**2**

→ **MATERIALS SCIENCE - FROM DESIGN TO APPLICATIONS**

The Master Degree in Materials Science “From Design to Applications” aims at providing a multidisciplinary, research-oriented training in Materials Science. Note that this master benefits from a multidisciplinary collaboration between the Schools of Engineering and Faculties of Science. It also benefits from the participation of the Materia Nova and INISMa research centres.

### • Course Programme

The programme covers all aspects of materials science through a combination of the fundamental techniques used in Materials Science and of specialised specific courses to be chosen in three main options: Surfaces and Interfaces, Advanced Metallic and Inorganic Materials, Polymers. Emphasis is laid on analytical skills and problem-solving abilities. Special focus will also be put onto the practical aspects of Materials Science through case studies and transversal projects designed for students to become more acquainted with the design, manufacturing, development, processing, characterisation and evaluation of most important materials classes. Moreover, practical experience will be performed by using the most relevant material characterisation and evaluation techniques available in the research units of the partnership. A theoretical or experimental thesis in relation with the research activities carried out in laboratories of the universities and research centres involved will complete the Master’s programme.

### • Target participants

This Master’s Course is open to students who hold a total of 240 credits obtained in university studies from one of the following disciplines: Materials Science, Chemistry, Physics, Chemical Engineering, or related disciplines.

### • Location

Mons and/or Brussels

### • Admission

The applicant should follow the procedure under “How to apply?”. Applications will be examined by a faculty teaching committee for approval, based on the student’s educational background, motivation, and knowledge of English (e.g., TOEIC or TOEFL scores). Note that in this particular case, the

procedure must be carried out online and the documents must be sent by e-mail. Besides the documents mentioned under how to apply, the student must also send: choice of the orientation (‘Surfaces and Interfaces’, ‘Advanced Metallic and Inorganic Materials’, or ‘Polymers’) and a preliminary selection of subject(s) for the Master thesis.

### • Degree awarded

For graduates in Engineering, this study programme leads to diploma degree in “Master of science in Chemical and Materials Engineering, specialized in Materials Science”. People holding a degree in science will graduate in “Master of Science in Chemistry, specialized in Materials Science”

### • Special grants available!

The graduates from these Masters have a privileged access to PhD programmes of Académie Universitaire Wallonie-Bruxelles (specific grants are sometimes available) and to a wide range of engineering sectors and to industrial positions in Belgium. Beyond our passion for Science, do you know what is common to you and us? We both truly care about your future!

### • About Materia Nova

**Materia Nova** is a non-profit-making organisation, situated at the very the heart of Initialis Science Park in Mons.

It has the following objectives:

- to carry out applied scientific research for industry and to carry out tests and analyses of all the materials used or produced by industry;
- to make its knowledge, expertise and equipment available to businesses through technological guidance;
- to facilitate dissemination and development of results of research carried out in Wallonia and abroad corresponding to its area of expertise (technological monitoring);
- to set up other activities, in particular training programmes, which will contribute to meeting above-mentioned objectives.

Materia Nova Research Centre has developed an expertise and activities which enable to offer a wide range of services in research areas to its partners and clients. It employs more than 60 highly qualified researchers and technicians. It aims to working in partnership with businesses to develop the new materials of the future, but also to improve those currently in use.

Materia Nova also works with and enjoys support from its founding university and thus constantly benefits from the outcome of their fundamental research activities.

→More information on [www.materianova.be](http://www.materianova.be)

## •About INISMa

The National University Silicates Institute for Grounds and Materials, **INISMa** is a non-profit association, having as a goal to carry out research work that is useful or could be useful for industry but also to carry out trials regarding all materials implemented or produced by industry.

→More information on [www.inisma.be](http://www.inisma.be)

## •Contacts

Contact for further information

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## •Contents

Minimum: 60 credits – maximum: 75 credits

<b>Core courses</b>	<b>10 credits</b>
Thematic courses (elective courses to be chosen in the three main topics, not restricted to a single topic)	Min.21-Max.36 credits
Project work and problem solving	8 credits
Master thesis	21 credits

Course	Teaching staff	ECTS
<b>Core courses</b>		
Intellectual property	S. CAYEMITTES	2
Local probe microscopies	R. LAZZARONI	4
Organic solids and supramolecular assemblies	Y. GEERTS	2
Surface analysis of materials	F. RENIERS	2

### Thematic courses

#### Surfaces and Interfaces

See our website for proposals for Master's thesis

**Heterogeneous catalysis** A. DECROLY 2

**Corrosion and surface treatments** M. OLIVIER  
M. POELMAN 3

**Adsorption by powders & porous solids** G. DE WEIRELD  
M. FRÈRE 2

**Thin film engineering** R. SNYDERS 3

**Industrial and analytical electrochemistry** C. BUESS 2

**Catalytic processes in industrial catalysis** N. KRUSE 2

**Physical Chemistry of Plasmas** F. RENIERS 2

**Surface treatment : processing and analysis** L. SEGERS  
H. TERRYN 4

#### Advanced Metallic and Inorganic Materials

See our website for proposals for Master's thesis

**Fracture mechanisms** M. GONON 3

**Functional ceramics and bio-ceramics** M. GONON 2

**Fabrication and use of advanced ceramics** F. CAMBIER 2

**Special steels and alloys** F. DELAUNOIS 3

**Semiconductors and applications** M. DEBLIQUY 2

**Metals: microstructure and characterisation** S. GODET VEREEKEN 4

**Ceramics: microstructure and characterisation** M.P. DELPLANCKE  
H. RAHIER 3

#### Polymers

See our website for proposals for Master's thesis

**Polymeric nanocomposite materials** PH. DUBOIS 4

**Soft matter** P. DAMMAN 4

**Chemistry of novel organic materials** J. CORNIL  
PH. LECLÈRE 6

**Applied organic chemistry** J.J. VANDEN EYNDE 4

**Polymers Surfaces and Interfaces** M. SFERAZZA 2

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## BIOSYS - Biosystems Engineering

Open in September 2010 !

### • Course Programme

BIOSYS is a specialized Master in Biosystems Engineering, focusing on methods and techniques for measurement, signal processing, system modelling, optimization and control with applications in medical signal and image processing, as well as process applications in the bio-industry, including red, green and white biotechnology.

The keywords of this programme are “signals, systems and control” as well as “biomedical engineering and bioprocess applications”. The course programme covers 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, technological introduction to various processes related to human health, environment, food and renewable energy.

The BIOSYS course programme is organized as a one-year curriculum totalling 60 ECTS credits. The course programme requires the completion of two projects and of a Master thesis (spring semester), both under the supervision of an expert, and comprises a series of seminars. Students can also choose some optional introductory courses, depending on their previous background, either in systems and control or in bioprocess engineering. Alternatively, language courses (including a French course for near-beginners) can be attended. All courses are taught in English.

### • Target participants

Students with a Master Degree in Electrical Engineering

### • Location

Mons

### • Admission

The applicant should follow the procedure under “How to apply?”. Applications will be examined by a faculty teaching committee for approval, based on the student's educational background, motivation, and knowledge of English (e.g., TOEIC or TOEFL scores). Admission is restricted to 20 students per year.

### • Degree awarded

“Master of Science in Electrical Engineering, specialized in Biosystems Engineering”

### • About BIOSYS

BIOSYS Research Centre is a R&D Centre active in scientific and engineering aspects of life sciences in a broad sense, including Bio-signal and image processing, Bio-chemical system analysis and bioprocess modelling, optimization and control, ecology and environment, as well as bio-mechanics and bio-optics. BIOSYS works with several university laboratories in chemical and biochemical engineering, mechanical engineering, signal processing, control, computer...

→More information on <http://polebiosys.fpms.ac.be>

### • Contacts

Contact for further information

**Mrs. Véronique Piette**

Faculté Polytechnique de Mons

Secretary of the Electrical Engineering Group

31 Boulevard Dolez

7000 Mons, Belgium

[veronique.piette@fpms.ac.be](mailto:veronique.piette@fpms.ac.be)

→See also our website: <http://tcts.fpms.ac.be/biosys>



## • Contents

Course	Teaching staff	ECTS
<b>Biomed &amp; BioTech Instrumentation</b>	C. RENOTTE	2
<b>Biomedical Signal Processing</b>	T. DUTOIT	3
<b>Dynamic Simulation</b>	M. REMY A. VANDE WOUWER, P. SAUCEZ	3
<b>Optimal estimation and control with applications to bioengineering systems</b>	M. REMY, A. VANDE WOUWER	3
<b>Population Models &amp; Bioprocess modelling</b>	A. VANDE WOUWER, P. BOGAERTS, C. RENOTTE	5
<b>Research Project</b>	T. DUTOIT, A. VANDE WOUWER	2
<b>Lectures / Optional courses 1</b>		3
<b>Application Project</b>	C. RENOTTE, B. GOSSELIN	2
<b>Advanced Control</b>	M. REMY C. RENOTTE	4
<b>Bioinformatics</b>	D. GILIS	2
<b>Medical Image Processing</b>	B. GOSSELIN	3
<b>Statistical Pattern Recognition</b>	B. GOSSELIN	3
<b>Lectures / Optional courses 2</b>		4
<b>Master Thesis</b>		21

## HOW TO **APPLY**

### → **Send a pre-application file with:**

- A CV and a letter of motivation
- Copies of ALL your degrees
- A transcript of all your university records (even if you failed the year)
- The title of the chosen master programme
- Your personal contact data

## TO

[Secretariat@academiewb.be](mailto:Secretariat@academiewb.be)

or (if not possible):

**Brussels Alliance for Research and Higher Education**

**Institute of Engineering**

Campus de Parentville

Rue de Villers 227 - 6010 Charleroi -Belgium

## BEFORE

August 31 for EU students or resident non EU students

March 31 for non EU students

Please consult the websites:

<http://www.ulb.ac.be/enseignements/inscriptions/espace-admissions.html>

or

<http://www.fpms.ac.be/FPMSHome/fr/Education/Admission/Beyond1stYearAdmi/AdmiOver1stYearProcess.htm>

→ **Your application will be examined by our services** and you will be informed on the enrolment procedure. In the meantime, you are advised to prepare the following documents:

- A passport photo (ID photo)
- A copy of your passport or ID Card
- An official document of your (professional or academic) activities in the last 5 school years (from September to June)

For official documents NOT written in French, Dutch, English, Spanish, Italian, German or Portuguese, a certified translation into French or English **MUST** be sent together with the copy of the original version.

See also the master course programme for possible specific requirements.

## LINKS AND CONTACTS

In all cases you may address your questions to **[secretariat@academiewb.be](mailto:secretariat@academiewb.be)**. If the question cannot be answered by the registrar's office, it will be dispatched to the concerned person.  
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