Iasi - cultural and academic city
Grigore T. Popa
University of Medicine and Pharmacy
and
university’s hospitals

Faculty of Medical Bioengineering
New building
Faculty of Medical Bioengineering

1990
- February 1990 - the Romanian Society of Medical Bioengineering was founded in Iasi.

1994
- in 1994, the Senate of Grigore T. Popa University of Medicine and Pharmacy from Iasi decided to start a program in bioengineering.
- The undergraduate program in MBE is among the pioneering programs in East-Europe.

2004
- The Faculty of Medical Bioengineering was a founding member of EAMBES (European Alliance for Medical and Biological Engineering and Science) in 2004

2010
- First Bologna graduated students – Bachelor in Bioengineering
- Accreditation of 5 Master Degree Programs
The Faculty of Medical Bioengineering offers academic programs and research in health and applied engineering sciences.
Faculty of Medical Bioengineering offers:

**2 Bachelor degree Programs**
**3 Master Degree Programs**

### Academic programs - BSc

<table>
<thead>
<tr>
<th>Level</th>
<th>Field</th>
<th>Program</th>
<th>ECTS</th>
<th>Number of students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor degree</td>
<td>Applied Engineering Sciences</td>
<td>Bioengineering</td>
<td>240</td>
<td>510</td>
</tr>
<tr>
<td>Health</td>
<td>Balneo-physiokinetotherapy and rehabilitation</td>
<td>180</td>
<td></td>
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</tbody>
</table>
The specialization of Bioengineering, accredited by ARACIS aims to train specialists with a broad platform in the following areas:

→ **equipment for diagnosis and treatment** - training is done by accumulating knowledge in the fields of electronics, computer, instrumentation, biomedical signal processing, physiological measurements;

→ **prosthetics** – devices that aim to replace damaged structures of the body - the study program consists of the following disciplines: chemistry, biomaterials, tissue engineering, biocomposites, biomechanics, prosthetics and orthotics.

→ **modern medical biotechnology** - combines and applies knowledge from biology, biochemistry, biological active substances, chemical engineering and biochemistry, in order to produce drugs, natural products, cosmetics, food, and stimulators.

**Graduate degree – Bachelor of Science in Bioengineering**

**Prospective jobs**

Medical Bioengineering - 222 907;
Education counselor - 235 201;
Prosthesis and orthotics technician - 323 001;

Technical and commercial representative - 341 501;
Commercial representative - 341 502;
Medical representative - 341 503.
## Master Degree Programs

<table>
<thead>
<tr>
<th>Field</th>
<th>Master program</th>
<th>Type of program / ECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applied Engineering Sciences</td>
<td>Clinical Bioengineering</td>
<td>Full time/ 120 ECTS</td>
</tr>
<tr>
<td></td>
<td>Advanced Medical Biotechnology</td>
<td>Full time/ 120 ECTS</td>
</tr>
<tr>
<td>Health</td>
<td>Rehabilitation</td>
<td>Full time/ 120 ECTS</td>
</tr>
<tr>
<td></td>
<td>Health management</td>
<td>Full time/ 120 ECTS</td>
</tr>
</tbody>
</table>

- **BASIC TO CLINICAL SCIENCE TRACK**
- **PROFESSIONAL SKILLS**
- **RESEARCH SKILLS TRACK**

- Master Thesis

- **201 MSc students**
- **150 MSc graduates**
Master Degree Program - Clinical Bioengineering

Learning outcomes of the program of study:

1. be capable to provide technical and operational support to the clients using clinical equipment and medical technology;
2. be able to offer consultancy regarding the assessment, purchase and installation of medical equipment;
3. know how to perform the periodic planned maintenance of medical equipment so that the medical devices could be used efficiently, safely and in accordance with their technical specifications;
4. have gained the capacity to solve issues concerning the management of medical equipment in hospitals and to ensure the achievement of high quality results in their operation;
5. to identify, formulate and solve problems which could occur in the operation of the medical equipment as part of the routine functioning of a hospital;
6. be capable to design and coordinate experiments in the biomedical domain and to analyze and interpret the obtained data.
Master Degree Program - Medical Biotechnology and Advanced Biomaterials

**Learning outcomes of the program of study:**

- Monitor, control and recording of process parameters in obtaining of biologically active compounds and biomaterials in order to obtain high yield, high purity and stability of the characteristics /properties.
- Identify and utilizing advanced techniques and procedures for obtaining and processing of biomaterials and bioproducts.
- Use methods and techniques of analysis and ensure the operation of equipment in preclinical and clinical laboratories, research centers and production units.
- Designs complex biomaterials for tissue engineering and advanced techniques of investigation and therapy and apply these techniques.
- Apply specific techniques used in the development of culture media and the elaboration of different models of cultivation, isolation, selection and storage systems employed in cell culture laboratories.
- Be able to execute models of biological systems and implement the models in biomedical investigations.
- Identify the functional characteristics and properties of implants and prosthesis in accordance with the applicable standards in the field.
Facilities

- Laboratory of Bioelectromagnetism;
- Laboratory of Biomedical Instrumentation;
- Laboratories of Biomaterials and Biotechnology;
- Laboratory of Biomedical Signal Processing;
- Center for Design, Testing and Maintenance of Medical Devices (DM-TEST);
- Regional Center of Telemedicine;
- Training and Research Center in Tissue Engineering, Artificial Organs and Regenerative Medicine;
- Center of Physiokinetotherapy and Rehabilitation
Research activity - key issue

Research directions

- Biomedical instrumentation and physiological measurements relating to diagnostic, therapeutic, and monitoring.
- Biomedical signals and imaging processing
- e-Health and telemedicine (telemedicine; mobile e-health services; home monitoring and applications; wireless homecare).
- Bioelectromagnetism (bioelectric and biomagnetic signals and their use in clinical diagnosis)
Research activity - key issue

Research directions

- Tissue engineering (tissue engineering scaffolding - bone, cartilage, skin, blood vessels)
- Biotechnology (special bioreactors and biomass processing)
- Nanotechnology (magnetic nanoparticles; polymeric nanocarriers; nanostructured materials)
- Rehabilitation (electric and magnetic functional stimulation; assistive technology)
Funded Projects

**BIOMAG** – New methods and techniques bioelectrometrics with high resolution for biomedical investigation and diagnosis

**NEUROFEEDBACK** - Brain – computer interface system for investigation, assistance and control of neurological diseases

**TELEMON** – Integrated system for real time telemonitoring of patients and elderly people

**CANCERDET** – Methods and techniques with microwaves for early detection of the breast cancer

**SIMPA** – e-Health integrated solution of vital parameters monitoring at patients with chronic diseases

**MAGSEPDETOX** - Researches on human blood detoxifying by using magnetic particles

**INTERBIORES** - Interdisciplinary research on multifunctional hybrid particles for bio-requirements
International collaborations

The values promoted by the Faculty are: innovation, dynamism, excellence, multiculturalism and intercultural dialogue

International collaborations (mobilities and scientific projects): Universitat Politecnica de Catalunya, Barcelona (Spain); Universite Paris XII Val de MARNE, Universite de Technologie de Compiegne, Universite Clermond Ferand (France); University of Ghent, Katholike Universiteit Leuven (Belgium); University of Portsmouth, University College of London (England); Politecnico di Torino, Universita degli studi di Napoli Federico II (Italy); Czech Technical University in Prague (Czech Republic); Johannes Gutenberg Universitat Mainz (Germany).

Companies (scientific projects)
CSC Pharma (Fidia), Italy – artificial cartilage;
Lohmann&Rauscher, Research and Development, Germany – tissue engineering
Silva Trading SRL-Wright Medical Technology, USA