



# GRIGORE T. POPA

## UNIVERSITY OF MEDICINE AND PHARMACY

### IASI, ROMANIA



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# FACULTY OF

# MEDICAL BIOENGINEERING

# ROMANIA



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

# EXCELLENCE

Our Measure • Our Motto • Our Goal



*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

Level	Field	Program	ECTS	Number of students
Bachelor degree	Applied Engineering Sciences	Bioengineering	240	510
	Health	Balneo-physiokinetotherapy and rehabilitation	180	

## Bachelor degree - BIOENGINEERING

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

Field	Master program	Type of program / ECTS
Applied Engineering Sciences	Clinical Bioengineering	Full time/ 120 ECTS
	Advanced Medical Biotechnology	Full time/ 120 ECTS
Health	Rehabilitation	Full time/ 120 ECTS
	Health management	Full time/ 120 ECTS

**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.*

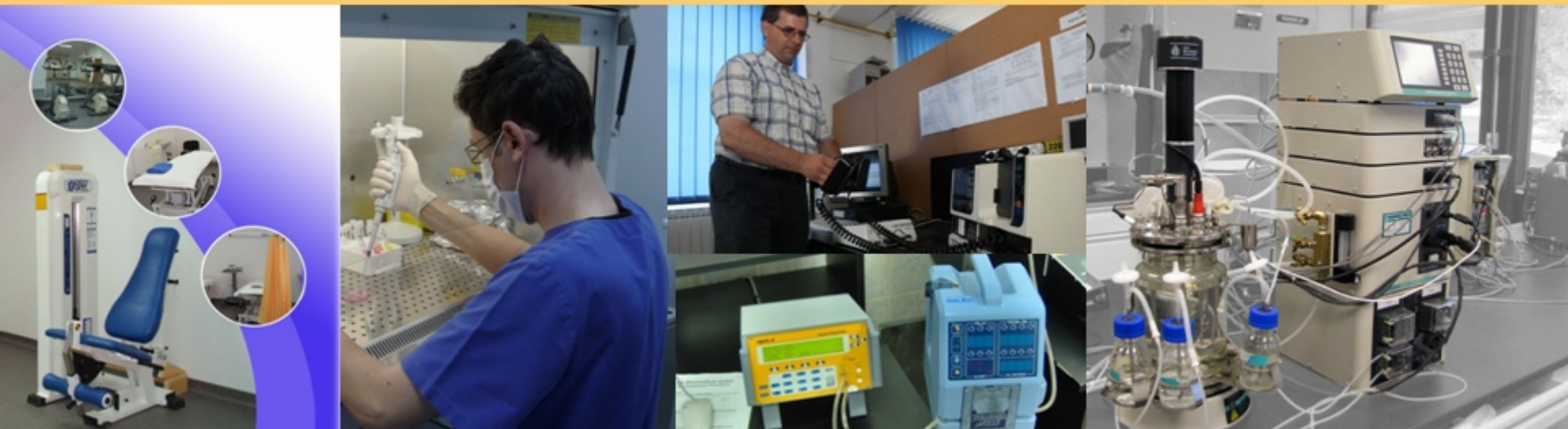
*Apply specific techniques used in the development of culture media and the elaboration of different models of cultivation, isolation, selection and storage systems employed in cell culture laboratories.*

*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)**

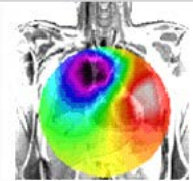
**Biotechnology (special bioreactors and biomass processing).**

**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



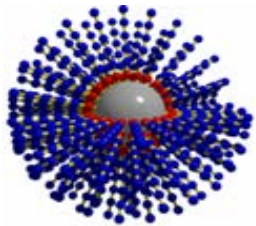
**NEUROFEEDBACK** - Brain – computer interface system for investigation, assistance and control of neurological diseases

**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 cronical diseases



**MAGSEPDETOX-** Researches on human blood detoxyfing 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 Compiègne, Universite Clermond Ferand (France); University of Ghent, Katholieke 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