Carol Davila University of Medicine and Pharmacy

Bucharest, ROMANIA

INTERNATIONAL MASTER PROGRAM

MEDICAL BIOPHYSICS AND CELLULAR BIOTECHNOLOGY

The main target of ***Master Program on Medical Biophysics and Cell Biotechnology*** are young people determined to make a career in Romania or abroad in the fields involving implementation and use of last generation equipment - in National Health System, universities, research and industry units.

The Master Program offers an introduction to **key health-related domains** required by occupational market.

Essential skills in biophysics and biotechnology - laboratory, radiobiology and radiotherapy, as well as in molecular/immune-histochemical diagnostics are acquired.

The Master Program is **organized and based** at Carol Davila Universiy of Medicine and Pharmacy-Department of Biophysics, in collaboration with Amethyst Center of Radiotherapy and MEDCENTER – Excellence Center of Pathology and Laboratory Medicine .

A team of **invited professors** from European universities are lecturing every year on up-to-date topics related to the Master Program.

The Master students are trained to perform a supervised research for their M.Sc dissertation. The best of them are involved in national/ international research projects of our department.

Topics

Basics of biophysical laboratory techniques (optical and fluorescence spectroscopy, magnetic resonance spectroscopy, fluorescence microscopy)

Cell biotechnology: cell culture, cell viability check, optical and electrical micromanipulation, biophysics of apoptosis

Genomics and proteomics

Basics of statistics and advanced processing of experimental data

Biophysics of noninvasive methods used in diagnostics and therapy

Biophysical principles of medical imaging (CT, RMI, PET, SPECT)

Modern therapy techniques (photodynamic therapy, electrochemotherapy)

Lecture on irradiation planning with Professor Ion Christian Chiricuta at Amethyst Center

Topics

Molecular diagnostics in pathology - concepts, methods, techniques (PCR, microarray, blotting, immunohistochemistry)

Ionising radiation in diagnostics and therapy. Tissue-radiation interaction. Basics of clinical radiobiology

Sources of ionizing radiation (Linear Accelerator, Cobalt-60, Superficial RX)

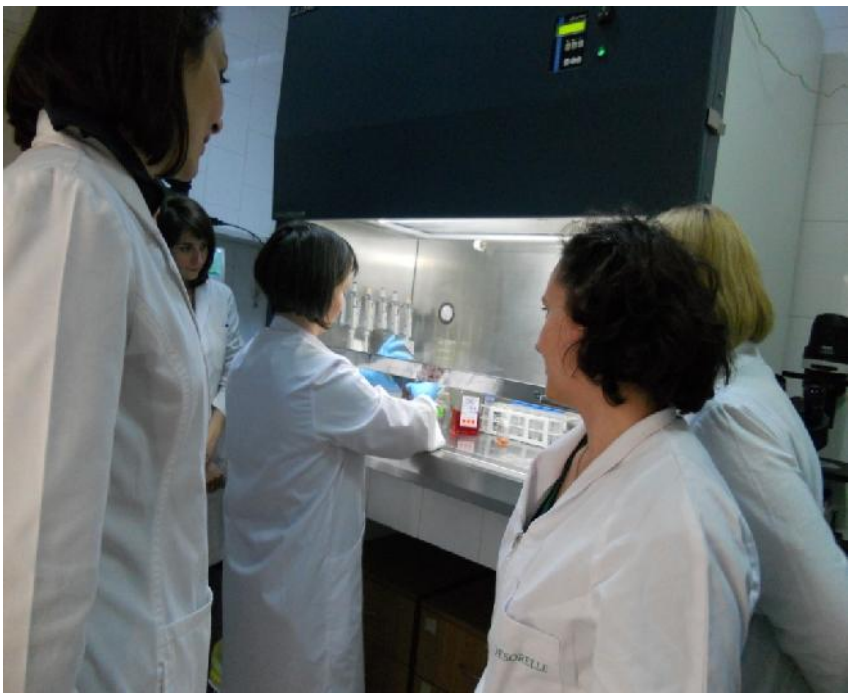
Biomedical applications of LASERs

Living tissue interaction with electromagnetic fields – cellular mechanisms

Basics and applications of artificial neural networks

Biophysics of reception and processing of visual signals

All courses are supported by hands-on practicals based on up-to-date equipment



Assoc. Professor Mihaela G. Moisescu presents to Master students the rules of cultured cells manipulation

Opportunities

- To complete the Bologna Ist cycle studies by a M.Sc. degree

- Getting the knowledge and laboratory abilities required by occupational market in the field of *radiobiology, basics of biophysics & biotechnology research laboratory , molecular/immunochemistry diagnostics*

- Possibility to continue the Master studies with a PhD in the same/ other department or abroad

- Participation in national and international research projects followed by publication of the results in IDB (International Data Base) quoted journals

- Participation in national and international schools and conferences

- Logistic support and recommendation in view of successful applications for short and long term scientific exchanges as well as PhD and postdoc grants in Europe and USA

- The Master Program has accreditation from the Romanian Medical Association (Colegiul Medicilor din România) corresponding to 150 EMC

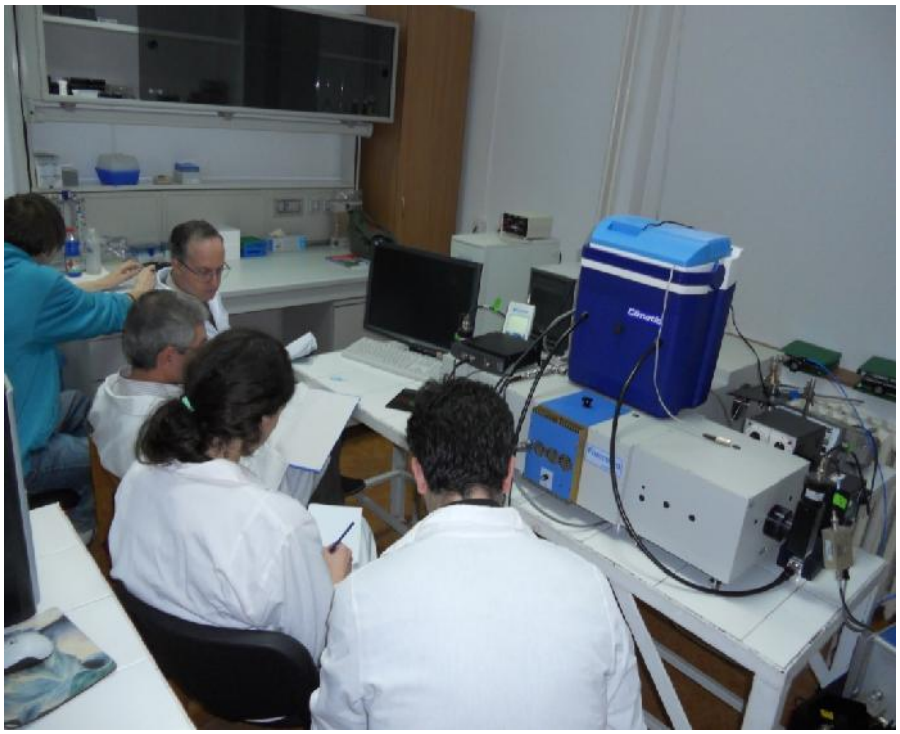
- The Master Program is recommended by the Order of Romanian Biochemists and Biologists for exerting the profession of biologist/biochemist/chemist in National Health System

International collaboration within the Master Program

Universidad Complutense de Madrid, Facultad de Ciencias Fisicas

National Technical University of Athens, School of Applied Mathematics and Physical Sciences

Université Paris 13, UFR Médicine, Santé, Biologie Humaine



Assoc. Professor Tudor Savopol explains to Master students how Laurdan fluorescence spectra may be used for exploring the structure of lipid membrane

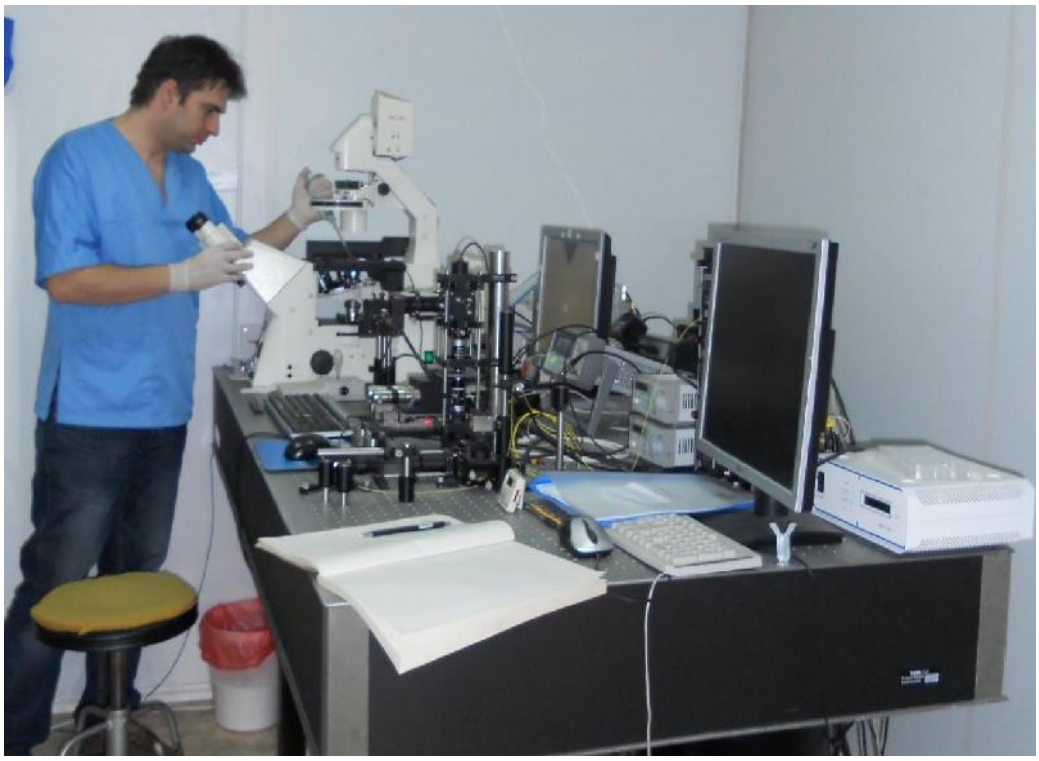
Open to graduates of

biology, medicine, physics, pharmacy, agronomy, engineering,

chemistry, biochemistry, biotechnology and any other related specialty

The Master Program has a duration of **4 semesters** and corresponds to **120 transferable credits**.

The courses and practicals are scheduled in the afternoon, allowing Masteral students to attend other activities (i.e. jobs, postgraduate studies).



Measuring cell-cell interaction forces with optical tweezers in Biophysics Research Laboratory at Carol Davila Medical University

The ***International Master Program in Biophysics and Cellular Biotechnology*** aims to build a bridge between modern biophysical techniques and their application potential in medical and biomedical research.

The graduates obtain the necessary knowledge to understand modern clinical investigation and therapeutic techniques.

It is a mostly hands-on practical master program.

Individual supervised work with cultured cells is encouraged for improving personal skills

Preparing an immunohistochemistry practical at MEDCENTER

Professional status of Master alumni

Work in any research or medical investigation laboratory as well as in private or public medical therapy centers

Work as medical physicist /biophysicist /biologist/biochemist/ chemist in medical system

Follow up a teaching career for graduate/postgraduate studies: human and veterinary medicine, physics, biology, chemistry

Work as an expert/consultant in specific areas: cellular and molecular biophysics, bionics, bioengineering, dosimetry, radio-diagnostic, radiotherapy, public health

Professor Ion Christian Chiricuta explaining the multileaf collimator of the linear accelerator at the Amethyst Center

Contact

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www.biophysics.ro

http://www.umf.ro/index.php/ro/activitate-stiintifica/cursuri-postuniversitare/master/142.html

Master students and lecturers – Professor Chiricuta, Professors Kovacs and Moisescu - at Amethyst Center of Radiotherapy

The Master Program is organized in cooperation with:

Amethyst RADIOTHERAPY

http://amethyst-radiotherapy.ro/

medcenter+ e vorba de sănătatea ta

www.medcenter.ro