UNIVERSITY POLITEHNICA OF BUCHAREST, ROMANIA

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INNOLEA: Innovation for the Leather Industry in Jordan and Egypt

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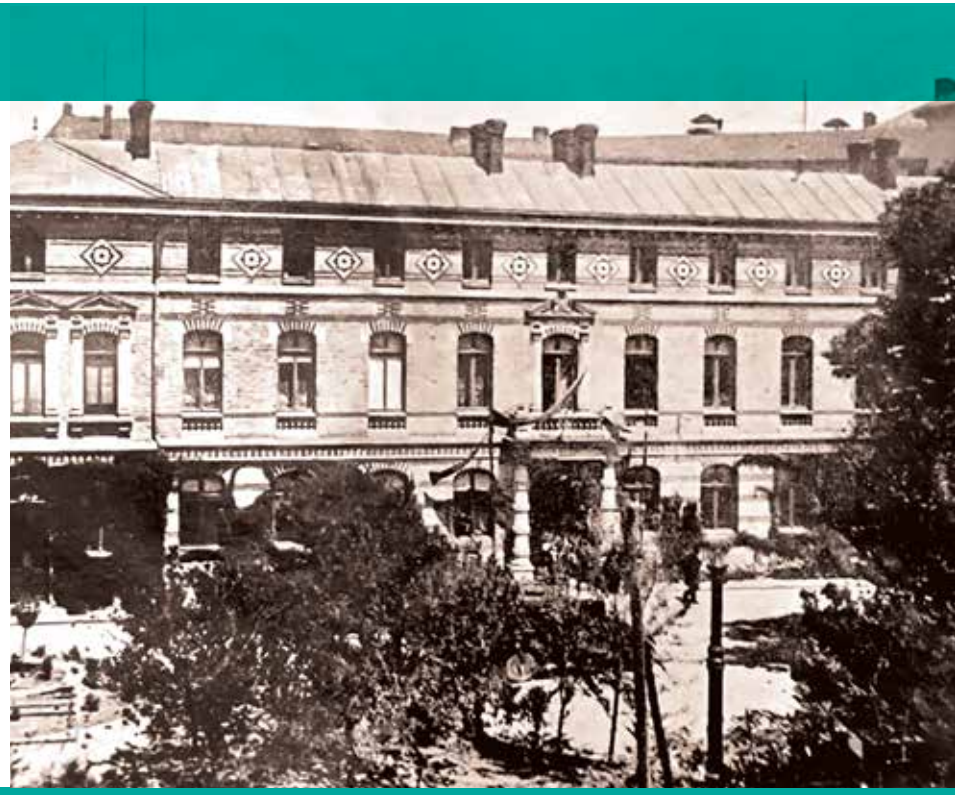
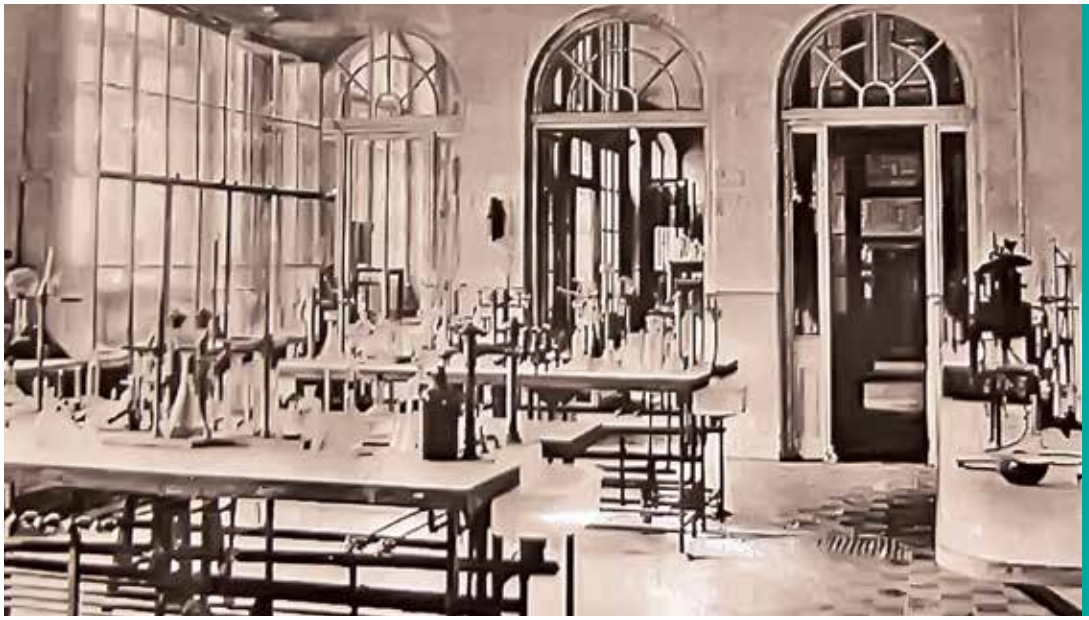
HISTORY

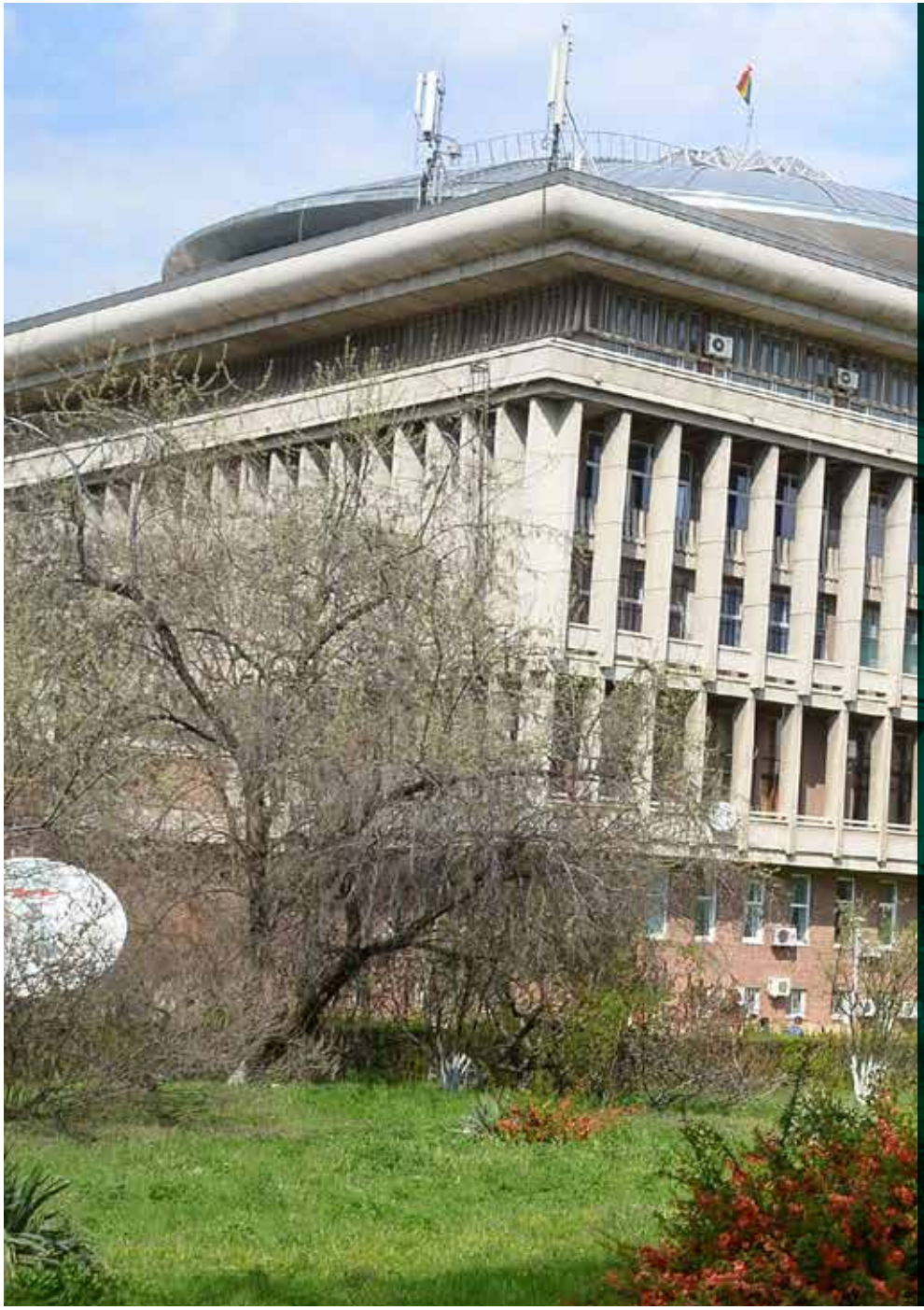
The largest and the oldest technical university in the country and among the most prestigious universities in Romania

With almost 200 years of existence, University POLITEHNICA of Bucharest represents one of the fundamental and prestigious institutions of Romanian higher education, being the main source for the technical specialists of Romania, as well for important scientific knowledge.





- 1818 – Gheorghe Lazăr is officially assigned to found schools of agronomic engineers near the St. Sava's Monastery;
- 1920 - King Ferdinand's decree - The POLITEHNIC School is founded;
- 1936 - The first PhD in engineering, awarded by the Polytechnic School - Welton J. Crook;



UNIVERSITY POLITEHNICA OF BUCHAREST

- Excellence in education and research in Romania –with the gratest student campus in the country, we host the largest number foreign and Romanian students.
- Most of the engineering fields are covered: electrical, mechanical, IT&C, materials science, applied chemistry etc.

- 30.000 students enrolled in BSc, MSc, and PhD studies

- Total budget – 392 mil EUR from witch 30% Government funds
- 1.400 staff members and 1.600 didactic personnel
- 51 research centres
- 115 patents submitted at the State Office for Inventions and Trademarks

UNIVERSITY POLITEHNICA OF BUCHAREST,

- **offers undergraduate and graduate programs of study, organized in 15 faculties**
- **35 study programs in foreign languages - English, French and German**

BACHELOR OF SCIENCE PROGRAMS

in 17 major fields and more than 75 distinct specializatons, with a duration of 4 Years;

MASTER OF SCIENCE PROGRAMS

in more than 180 specializations, with a duration of 2 years

PH.D. DEGREES

in 14 fields of Engineering Sciences, with a duration of 3 years.

UNIVERSITY POLITEHNICA OF BUCHAREST IS

- **a Pole of Competitiveness**
  One of the largest and important national research area;

- **a invitation to cooperation and joint use of the infrastructures.**

EU FUNDS

NATIONAL BUDGET

PRIVATE SECTOR

GOOD RESULTS

DEVELOPING OF DOCTORAL SCHOOLS

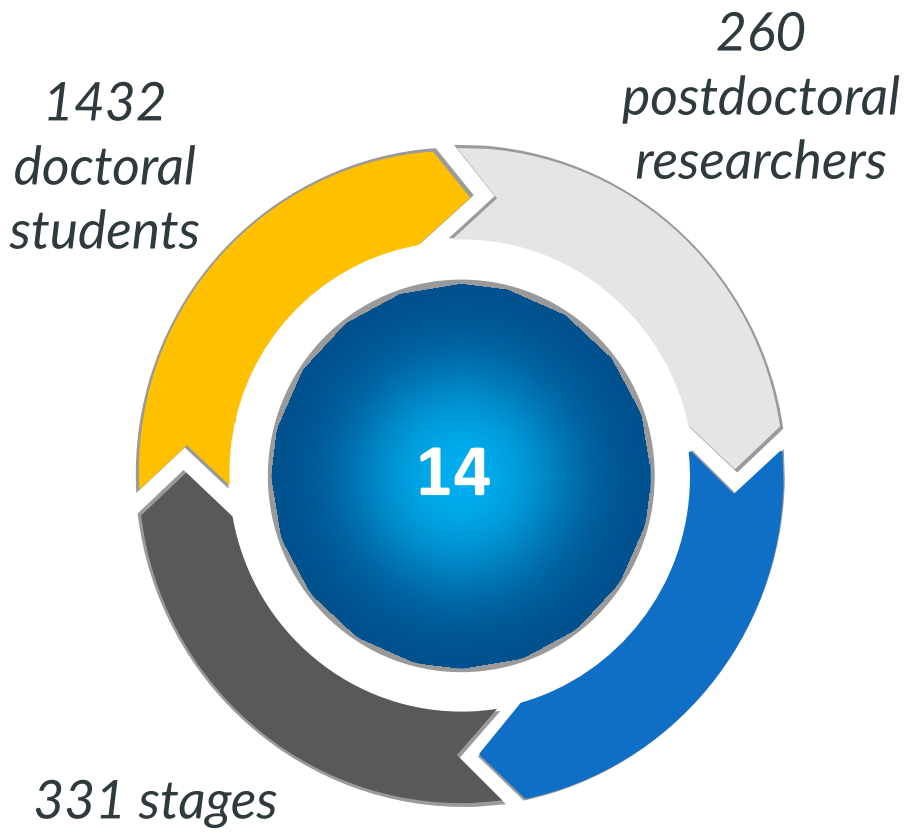
- Top-down approach for which the deciding body was set up at the university board;

- All the strategies should be accompanied by substantial funding allocation including at least money for in-going and out-going mobility of doctoral candidates, supervisors and/or running of joint doctoral programs;

- The universities rather preferred to spend more money on research infrastructure than to internationalization component of doctoral studies;

- The structural funds allocated in the last six years from EU budget especially for sustaining doctoral programs have contributed to a real stimulation of doctoral studies and allowed universities to develop a significant internationalization component of studies.

PROJECTS FOR DOCTORAL AND POSTDOCTORAL STUDIES



THE MAIN RESEARCH FIELDS AND APPLICATIONS AT ELI-NP

The use of the very high intensity laser and the very brilliant, intense γ-beams will achieve major progress in nuclear physics and its associated fields:

- Investigation of the high-power laser-matter interactions using nuclear physics methods in order to study the possibilities of obtaining high quality proton and heavy ion accelerated beams using lasers;

- The extremely high intensity of the laser beam will allow the study of fundamental physics phenomena anticipated by theory, such as vacuum birefringence and pair creation in intense electric fields;

- Investigation of nuclear structure and cross sections of interest for astrophysics using photonuclear reactions;

- New methods of identification and remote characterization of nuclear materials will be investigated with application for homeland security (remote automatic scanning of transport containers) and nuclear material management;

- New ways of producing more efficiently radioisotopes currently used in medicine and the producing of newly proposed ones;

- Simultaneous use of the high intensity gamma and laser beams will enable fundamental physics studies as pair production in vacuum.

LASERS RESEARCH - IN UNIVERSITY POLITEHNICA OF BUCHAREST

The Doctoral School of Engineering and Applications of Lasers **was founded on the basis of a partnership between the University Politehnica of Bucharest and a various number of research institutes from Bucharest, in order to achieve excellence in training and research and optimization of sharing human, material, and financial resources.**

RESEARCH TOPICS:

- Computational Nuclear Physics
- Automatic Differentiation
- Nuclear Spectroscopy
- Modeling of Nuclear Physics Experiments
- Optics And Detector Design For The Eli-Np Slow Positron Beam Line

CONTRIBUTION OF EU FUNDS TO BUILDING ADVANCED RESEARCH INFRASTRUCTURE

The two investment projects are based on the most advanced technologies in terms of energy, including priority use of renewable sources.

Research Center for Advanced Materials, Products and Processes - CAMPUS

Research Infrastructure for Developing Innovative Intelligent Products, Processes and Services – PRECIS

RESEARCH CENTER FOR ADVANCED MATERIALS, PRODUCTS AND PROCESSES (CAMPUS)

TOTAL PROJECT VALUE – 16.300.000 EURO

Represents a successful project carried out by the University POLYTECHNIC of Bucharest for the development and modernization of the research infrastructure of the university.

Developed area - 8600 m2 - 41 research labs, classrooms, a conference room, offices, horizontal and vertical movement, ground floor and 7 floors and underground for civil defense shelter, workshops, technical basement.

CAMPUS

Nowadays finished, the building for excellence research within the programs resulted from the university's strategy comprises 41 research laboratories, adequately equipped and intended for top fields such as:

- *Micro - and nano-materials;*
- *Food safety;*
- *Electronics and telecommunications (ex. circuits, antennas);*
- *Computers (e.g. artificial intelligence);*
- *Information technology (e.g. imaging and audio expertise);*
- *Electrical engineering (e.g. electric cars);*
- *Energetics and mechanics*
  (e.g. environment protection, alternative energy sources).

RESEARCH INFRASTRUCTURE FOR PRODUCTS DEVELOPMENT, PROCESSES AND INNOVATIVE INTELLIGENT SERVICES (PRECIS)

TOTAL PROJECT VALUE: 10.937.586 EUR

28 new laboratories and research departments

8300m2 developed built area

11 international projects in which PRECIS infrastructure will be involved

THE PASSIVE HOUSE

The testing facility for developing energy from efficient technologys.

Performance Characteristics:

- *Producing more energy than its own consumption (photovoltaic panels, heat pump)*
- *Total primary energy consumption (primary energy for heating, hot water and electricity) ≤ 120 kWh/m²yr*
- *Air changes ≤ 0,6 1/h at 50 pascal pressure, measured by blower-doortest*

Challenges

- *Global nal energy demand in buildings increases by 60% from 2007 to 2050.*
- *Global energy-related greenhouse gas emissions will more than double by 2050.*

COGENERATION PLANT

UPB has its own cogeneration plant covering the own heat and electricity demand.

- 2 Power Generators, Jenbacher type with a power of 0.8 MW and 1 MW thermal power;
- 3 hot water boilers, Hoval type, each having a heat output of 6.8 MW;
- Primary fuel: natural gas
- Engine Driven electric yield: 39%
- Engine Driven overall yield: 86%
- Boiler efficiency: 93%
- Annual electricity production: approx. 13,000 MWh
- Annual heat production: approx. 21,000 MWh from which 12,000 MWh in cogeneration.

UNIVERSITY POLITEHNICA OF BUCHAREST SMART GREEN CAMPUS

- the U.S. Trade and Development Agency awarded a grant to University Politehnica of Bucharest in support of a feasibility study for implementing a Smart Micro Grid pilot system on campus;

- one of the first campuses of its kind in Europe;

- increase efficiency in the energy generation and utilization;

- interactive adjustment of production in relation to energy consumption, and consumption in relation to production.

- this project will utilize technologies such as gas engines, energy efficient lightning, distribution and outage management systems, smart metering, rooftop photovoltaic systems and energy storage systems.

Bucharest is the greatest Romanian city with a lot of extra curricular resources

Bucharest is the 6th largest capital in the EU

BUCHAREST - CITY OF LIGHT

- The city's Palace of the Parliament is the second-largest building in the world.

- Bucharest is laden with historical charm – from the streets of the Old City Center, which are slowly being restored, to the grand architecture of the Royal Palace and the lush green of Cismigiu Park.

BUCHAREST - CITY OF LIGHT

- The city claims a large number of museums, art galleries, exquisite Orthodox churches and unique architectural sites.

- The mix of nationalities and cultures is reflected in the mishmash of architectural styles, from baroque to neoclassical to art nouveau.

BUCHAREST - CITY OF JOY

- In the period between the two World Wars, the city's elegant architecture and the sophistication of its elite earned Bucharest the nickname of "Little Paris".

BUCHAREST - CITY OF JOY

- In the recent years, the city has been experiencing an economic and cultural boom.

- Economically, Bucharest is the most prosperous city in Romania and one of the main industrial centers and transportation hubs of Eastern Europe.

BUCHAREST - CITY OF JOY

Bucharest is becoming one of Europe's top MICE (Meetings, Incentives, Conventions and Exhibitions) locations, its eastern position, the constantly improving infrastructure with one of the biggest airports in Eastern Europe, its concentration of forward-looking companies and its internationalism make Bucharest a diverse and innovative city.

THANK YOU!