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National & Kapodistrian University of Athens
ESL & E^{2}ReLab Presentation

HELLENIC REPUBLIC
National and Kapodistrian University of Athens
EST. 1837

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The National & Kapodistrian University of Athens (NKUA) is the oldest (est. 1837) University in Greece. It currently comprises 9 Schools and 35 Departments, with over 41,000 undergraduate and over 25,000 graduate students, of which approximately 9,000 are enrolled in PhD progammes. The academic staff consists of 1600 professors and about 500 research associates, teaching, laboratory and technical staff, while the administrative staff amounts to over 1,000 persons. The teaching and research facilities are located at the University Campus, in the centre of Athens, and the Euripus Campus on the island of Evia.

NKUA at a Glance - Facts and Figures

History at a glance:

1837 Founded under the name “Othonian University”.
During its first year of operation, it had 33 professors, while courses were attended by 52 students and 75 non–matriculated “auditors”

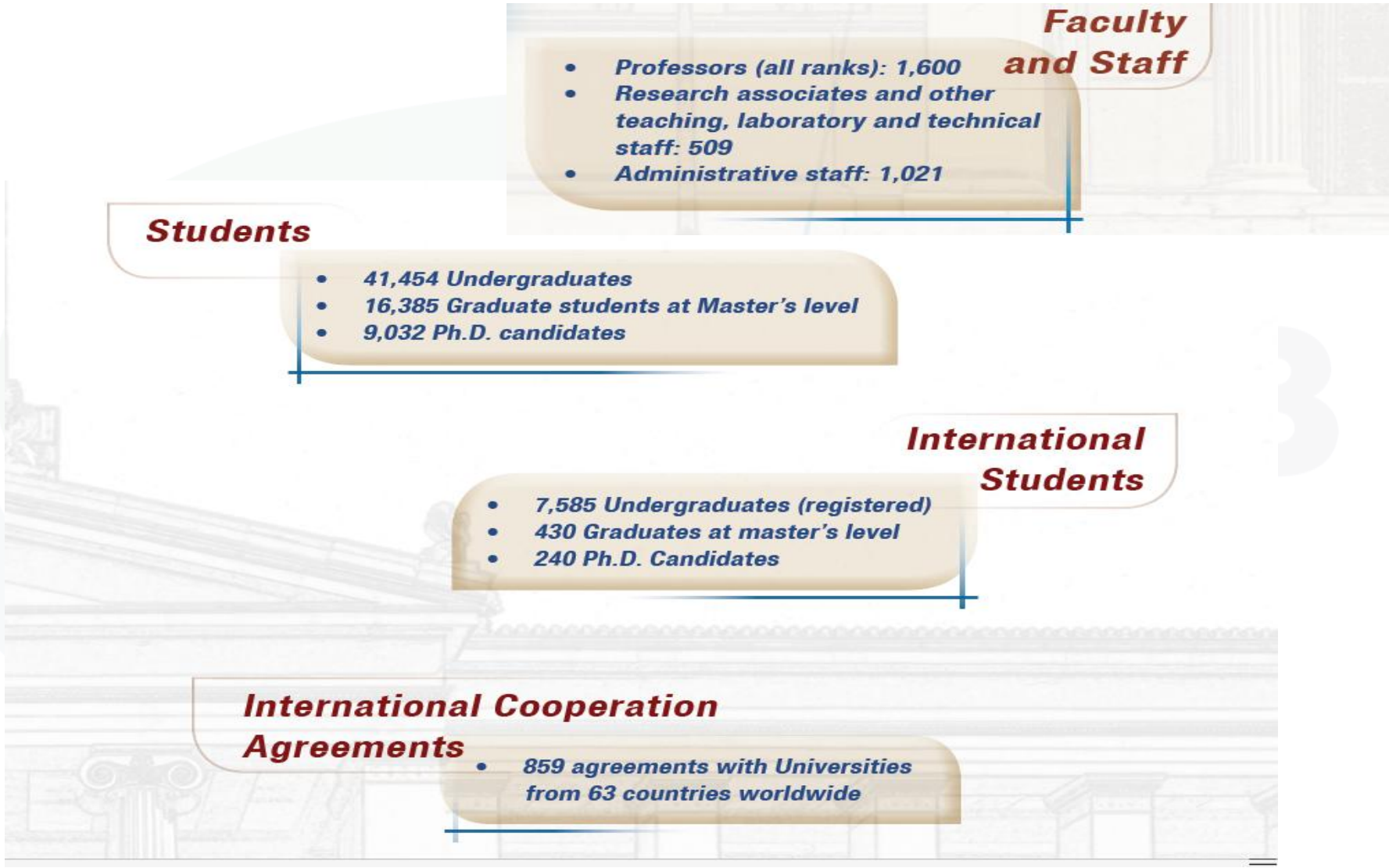
1862 Renamed to “National University”

1911 The “Kapodistrian University” is founded

1932 Merged and renamed as
“The National and Kapodistrian University of Athens”

Studies and Services

- Undergraduate programs: 41
- 2 undergraduate programs for international students exclusively, all the courses of which are taught in English:
  - "BA Program in the Archaeology, History and Literature of Ancient Greece"
  - "Medical Degree in English"
- Postgraduate programs: 239
- Centers of Excellence: 15
- Centers of Expertise in Rare Diseases of the School of Medicine: 18
- University Research Institutes: 23
- University Hospitals: 3
- Departments under the auspices of the School of Health Sciences: 72
- University Laboratories: 287
- Libraries: 11
- Museums: The History Museum, the Historical Archive of the University and 17 thematic museums


Faculty and Staff
Professors (all ranks): 1,600
Research associates and other teaching, laboratory and technical staff: 509
Administrative staff: 1,021
Students
41,454 Undergraduates
16,385 Graduate students at Master's level
9,032 Ph.D. candidates
International Students
7,585 Undergraduates (registered)
430 Graduates at master's level
240 Ph.D. Candidates
International Cooperation Agreements
859 agreements with Universities from 63 countries worldwide

SCHOOLS AND DEPARTMENTS:

- SCHOOL OF AGRICULTURAL DEVELOPMENT, NUTRITION AND SUSTAINABILITY
- SCHOOL OF ECONOMICS & POLITICAL SCIENCES
- SCHOOL OF EDUCATION
- SCHOOL OF HEALTH SCIENCES
- SCHOOL OF LAW
- SCHOOL OF PHILOSOPHY
- SCHOOL OF PHYSICAL EDUCATION AND SPORT SCIENCE
- SCHOOL OF SCIENCE
- SCHOOL OF THEOLOGY

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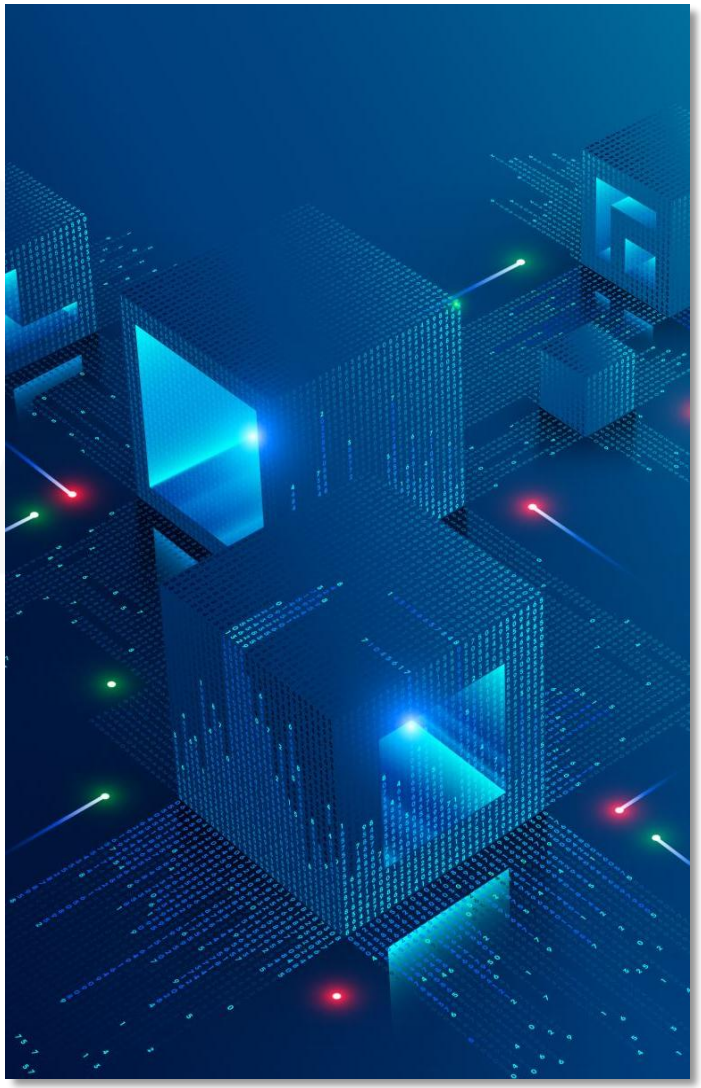
Department of Digital Industry Technologies

New energy competence system and technology for WB energy stability system curriculum reform
(Call: ERASMUS-EDU-2023-CBHE, Project number: 101129321)

Academic Profile of the Undergraduate Program

- Development of a strong background in the technologies of the wider area of information and telecommunications, specializing in digital industry systems and its management.
- Contribution to training in industry digital transformation technologies:
  - Big Data Analysis
  - Advanced mobile network services
  - Cloud Computing Technologies
  - Internet of Things
  - Robotics and Automation
  - Cyberphysical Systems
  - 3D printing
  - Artificial Intelligence, Machine Learning



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Department of Agricultural Development, Agri-Food and Natural Resources Management

School of Agricultural Development, Nutrition and Sustainability

National and Kapodistrian University of Athens

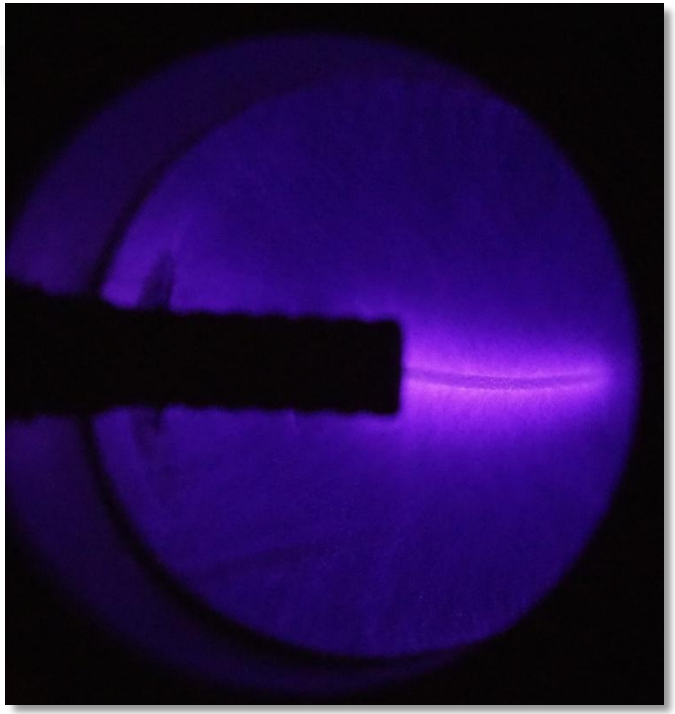
New energy competence system and technology for WB energy stability system curriculum reform
(Call: ERASMUS-EDU-2023-CBHE, Project number: 101129321)

The curriculum cultivates and promotes the science of Agricultural Development, Food Technologies and Sustainability emphasizing knowledge, expertise and new technological developments

- in the ***primary sector*** (eg Precision Agriculture, Sustainable Development, Climate Change, Conservation of Biodiversity),
- in the ***secondary sector*** (e.g. processing, standardization, packaging Viticulture, Dairy, Olive, Beekeeping products)
- in the ***tertiary sector*** (eg Investments, Certification, Marketing, Sustainable Entrepreneurship).

Energy Systems Laboratory (ESL)

The Energy Systems Laboratory (ESL) is located at the Euripus Campus and aims in the advancement of scientific knowledge and education in the field of Power Systems Engineering, Smart Grids, Microgrids, Building Installations, High Voltage Technology and Pulsed Power. It has its own teaching and research laboratories as well as a RES Microgrid Laboratory with PV panels, a Wind Turbine, a generator and batteries.



ESL specializes in energy systems and ICT technologies, such as:

- ✓ Modeling, simulation and optimization of renewable (RES) and conventional energy systems, stand-alone or grid-tied,
- ✓ Smart energy grids and building installations,
- ✓ Energy production optimization and RES penetration, energy efficiency, power quality, testing and control of electromechanical building systems and lighting,
- ✓ Electrical installations (LV, MV, HV),
- ✓ Gamification,
- ✓ Power electronics and applications, power flow, protection, stability and security of electricity grids,
- ✓ High-voltage testing of electrical power system apparatus,
- ✓ High-voltage and pulsed power applications

GRADUATE PROGRAM (MSc)
Intelligent Management of Renewable Energy Sources

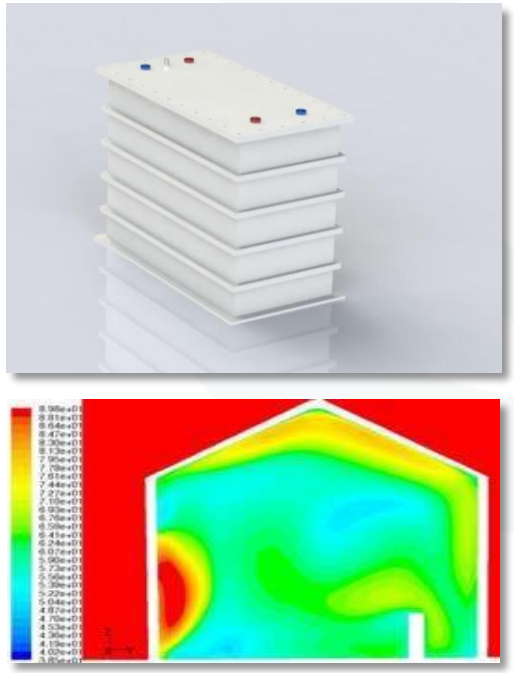
It also supports the MSc program in **"Intelligent Management of Renewable Energy Systems"** offering, among others, courses in:

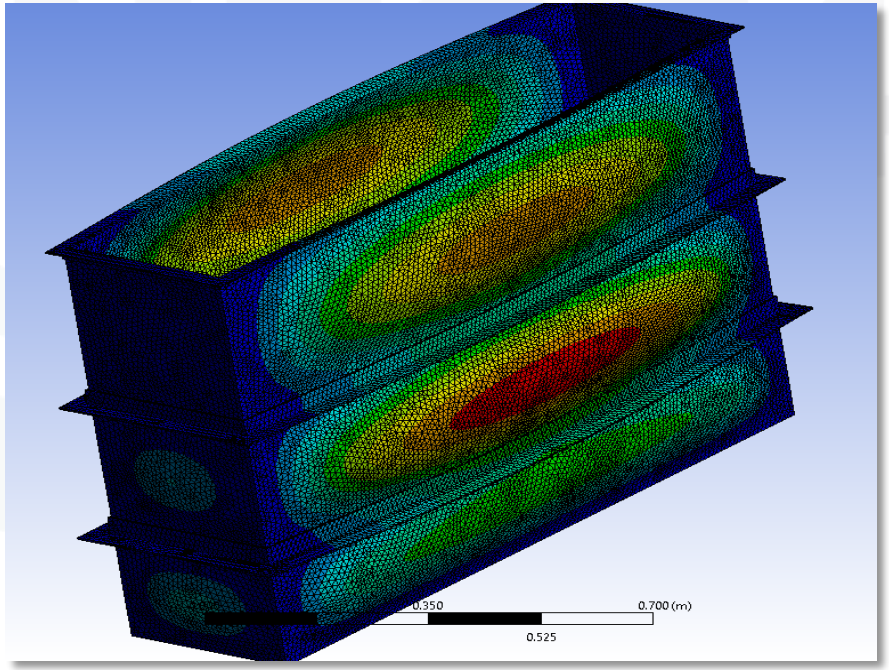
Spring Semester	Winter Semester
EP1110 - System Optimization	EP1210 - System Simulation and Modelling
EP1120 - Power Systems Analysis	EP1220 - Network Security
EP1130 – Telemetry and Control	EP1230 - Advanced Energy Saving Technologies
EP1140 - Integrated Renewable Energy Systems	EP1240 - Electrical Energy Markets
Master Thesis	

http://mes.core.uoa.gr

Energy & Environmental Research Laboratory (E^2ReLab)

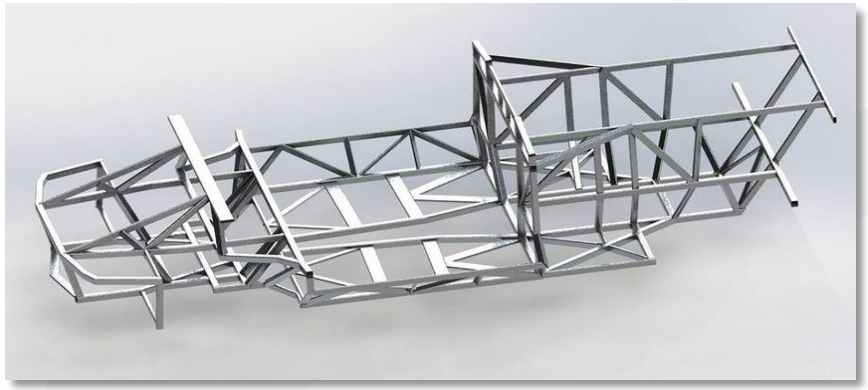
The Energy & Environmental Research Laboratory (E^2ReLab) is located at the Euripus Campus and aims in the advancement of scientific knowledge and education in the field of Solar and Geothermal RES, Refrigeration and Energy in Buildings. It has its own teaching and research laboratory as well as a RES microgrid composed of solar-thermal, geothermal, Organic Rankin Cycle (ORC) sources, Phase Change Material Thermal Energy Storage (PCMTES) infrastructure and a thermal energy testing rig.





E^2ReLab specializes in energy systems and technologies, such as:

- ✓ Finite Elementa Analysis & Computational Fluid Dynamics (FEA – CFD) for thermal energy applications,
- ✓ Reenable Energy Applications with emphasis in Solar-Thermal and Geothermal energy focusing in the building and industrial sectors,
- ✓ Thermal Energy Storage technologies emphasizing in Phase Change Materials,
- ✓ Utilization of RES in refrigeration and air-conditioning applications
- ✓ Building Energy Management Systems, Building Energy Auditing and Deep Energy Renovations in Buildings,
- ✓ Community-wide energy monitoring and energy projects such as district heating and district cooling systems



E²ReLab supports the MSc program in **"Design and Development of Racing Vehicle Systems" (UOA)** offering, among others, courses in:

MSK24 - Special chapters for the design of racing vehicles
EP1120 – Engines & Hybrid Technologies
Master Thesis

https://sportsvehicledesign.core.uoa.gr

E²ReLab supports the MSc program in **"Energy Production & Management" (NKUA)** offering, among others, the course:

2nd Semester
833 - Solar Energy – Geothermal Energy – Biomass
Master Thesis

https://epm.ntua.gr/

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PhD degree in Chemical Engineering (NTUA) in the field of installations analysis and design

Anna Tatsiopoulou
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B.Sc. in Agriculture (Agricultural University of Athens -AUA-, Greece);
PhD (University of Patras, Greece, Dept. of Business Administration, in Sequential Pattern Mining for gamification applications);

Lida Tzanetou
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Dimitris Mele
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John Konstantaras
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B.Sc. in Electrical Engineering (Dept. of Electrical Engineering, Technological Institute of Sterea Ellada, Greece)
Researcher in: RES microgrids, Energy storage applications, thermal energy systems