



# Energy Technology

# Programs in the field of “Energy Technology”

## Summer School

- Nuclear Engineering
- Turbomachinery
- Electrical Engineering
- Oil & Gas in Energy Industry
- Renewable Energy
- Energy Efficiency and Sustainable Development



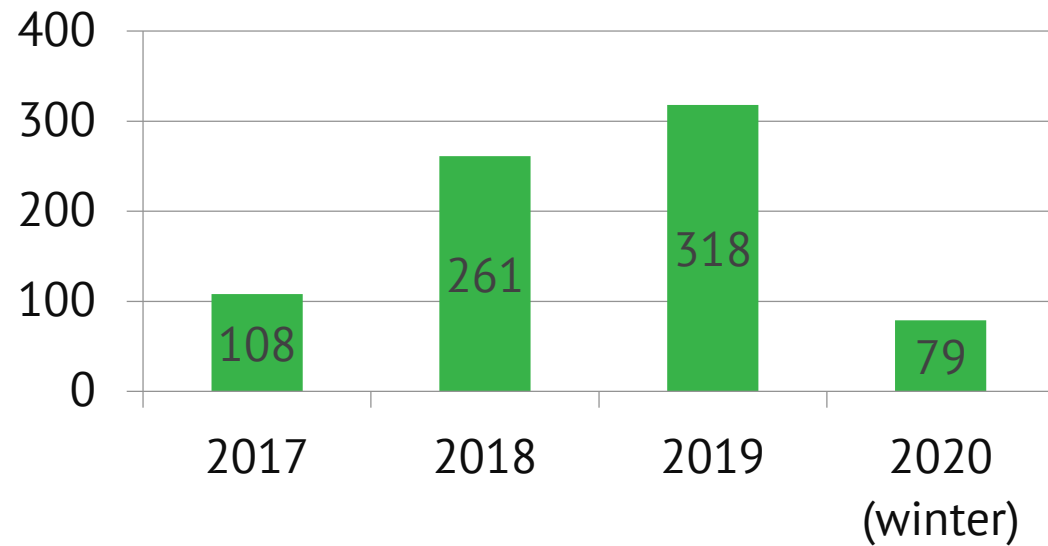
## Winter School

- Nuclear Engineering
- Turbomachinery
- Electrical Engineering
- Oil & Gas in Energy Industry
- Renewable Energy
- Energy Efficiency and Sustainable Development

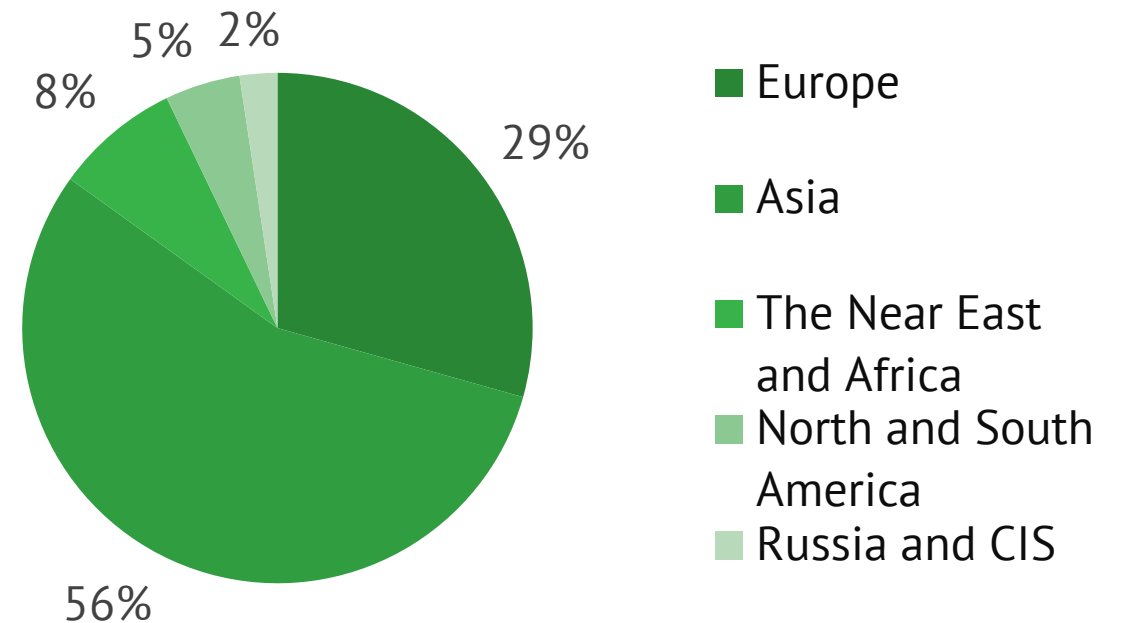


# Key facts

A number of students per year



Distribution by region (2019)



# Winter School in the field of “Energy Technology”

JANUARY 27 – FEBRUARY 7, 2020



# Nuclear Engineering, Turbomachinery, Electrical Engineering, Oil & Gas in Energy Industry

SPbPU on behalf of the Institute of Energy presents traditional and annual Winter Energy School. The School provides the opportunity to attend intensive academic program with lectures and company visits (Thermal Power Plants, Nuclear Power Plant, industrial companies and leading enterprises).

All studies are developed according to the European requirements and can be recognized as a period abroad. The 2020 edition of the Winter Energy School is organized to offer 5 ECTS in the fields of Electrical Engineering, Nuclear Engineering, Oil and Gas in Energy Industry and Turbomachinery.



# Nuclear Engineering, Turbomachinery, Electrical Engineering, Oil & Gas in Energy Industry

**Programs dates:**

**Arrival:** Jan 25 – 26, 2020

**Classes:** Jan 27 – Feb 07, 2020

**Departure:** Feb 08 – 09, 2020

**Duration:** 2 weeks

**ECTS credits:** 5.0

**Participation fee:** 43 000 (40 000\*) Rubles

\* early bird fee until the 10th of November

**Includes:** tuition fee, course material, company visits, cultural program.

**Accommodation:** not provided

Can be booked at the university campus if free places are available, or found by participants independently. Accommodation fee on the campus: approx. 700 RUB/day/person (double room).

**The cultural program includes:**

- Excursion to the Hermitage, one of the world's largest and oldest museums of fine art
- Bar & Farewell party
- Sightseeing tour of St. Petersburg
- Russian language & culture class



# Renewable Energy

Up-to-date interdisciplinary program provides an overview of technical and engineering aspects of innovative energy system design and implementation. Theoretical courses will analyze characteristics of renewable energy sources and examine the socioeconomic impact of energy transition. International professionals will boost your knowledge and skills in this highly demanded field of expertise.

## The course content includes:

- Renewable Energy Sources; Economics and environmental impacts of renewable energy systems;
- Bioenergy Technology Solutions; Overview of historic and current biomass consumption and organic waste production; Bioenergy Status Today: trends, perspectives, limitations in bioenergy;
- Wind Energy; Principles of Wind Power Conversion; Fundamentals of Aerodynamics; Design and Layout of Wind Farms;
- Renewable Energy Systems Design.



# Energy Efficiency and Sustainable Development

This program offers training in the field of energy efficiency technologies and renewable energy. You will gain essential technical skills in this area as well as study financial, marketing and managerial aspects of modern business. Multidisciplinary approach, critical review of existing practice throughout the program will enable you to come up with original and creative solutions to problems within the energy sector.

## The course content includes:

- Urban Energy Mining; modernization of the urban environment, opportunities for development and innovative technologies;
- Energy Efficiency of Urban Systems and Buildings; Energy Consumption Assessment; Building Energy Simulation;
- Energy Economics; Energy Economics Concepts, Issues, Markets and Governance; Environmental policy for energy markets;
- Sustainable Energy Development; concept of Sustainable Development, the environmental, social and economic dimensions.





# Renewable Energy, Energy Efficiency and Sustainable Development

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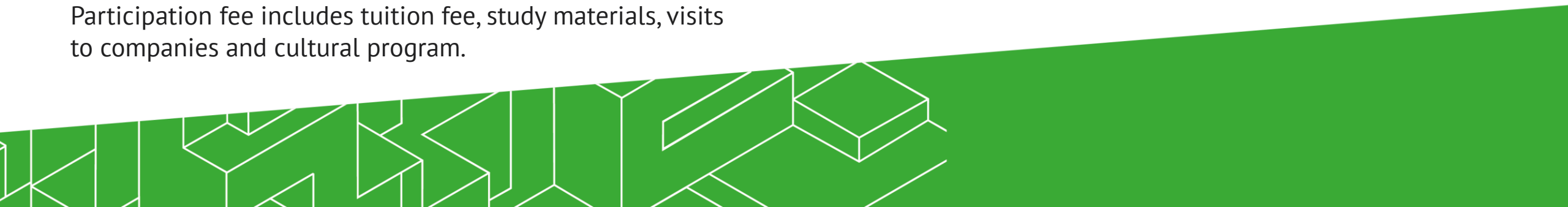
Early bird registration fee: 540 euro

Regular registration fee: 570 euro

Participation fee includes tuition fee, study materials, visits to companies and cultural program.

**The cultural program includes:**

- Excursion to the Hermitage, one of the world's largest and oldest museums of fine art;
- Pub Quiz;
- Excursion to the Kunstkamera museum, a cabinet of curiosity;
- Field trip to the "Baltika" Brewery/"Coca-Cola" factory where students can learn about the construction and logistic peculiarities of the plant;
- Full-day Wintry Event with sleigh riding and skating (optional for extra price).



## Contacts

**Renewable Energy, Energy Efficiency  
and Sustainable Development**

### **Program coordinators:**

- **Sultan Makoev**
- **[renewableschool@spbstu.ru](mailto:renewableschool@spbstu.ru)**
- **+7 (812) 904-10-54**
- **+7 (981) 691-10-84**

# Summer School in the field of “Energy Technology”

JULY 13 – 24, 2020

AUGUST 4 - 16, 2020



# Nuclear Engineering

The School provides the unique opportunity to attend intensive academic program, which is composed of different lectures in nuclear engineering with experience from professors of European countries, with different opinions and approach. All studies are developed accordingly to the European requirements and can be recognized as a period abroad.

## Skills and competence to be acquired by students:

- during three weeks students get practical skills in modeling of different modes of nuclear power plant (will be used specialized software);
- open lectures on the base of our industrial partner Rosenergoatom, the branch of "Leningrad Nuclear Power Plant" / State Atomic Corporation "Rosatom" / Central Institute for Advanced Studies of State Atomic Corporation "Rosatom"
- deep knowledge in nuclear engineering, technologies, legislation, and innovations in Russian Federation and abroad.

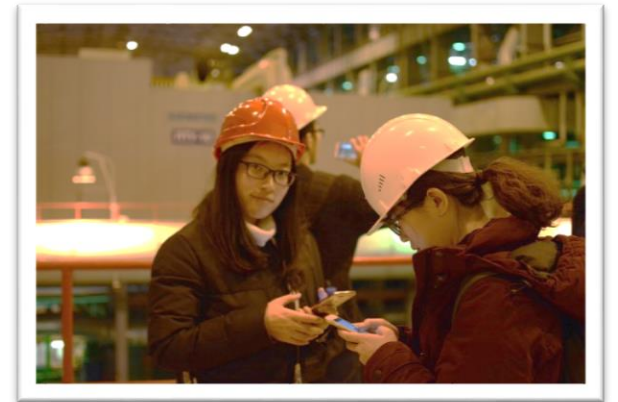


# Turbomachinery

The School provides the unique opportunity to attend intensive academic program of leading professors from Russia and abroad. The study plan is composed of seminars and lectures in gas / steam/ micro turbines and CFD modelling and also includes practical tasks, technical games and team work. All studies are developed accordingly to the European requirements and can be recognized as a period abroad. Besides studying at the Polytechnic university participants also visit leading energy companies.

## Skills and competence to be acquired by students:

- during two or three weeks students get theoretical and practical skills in CFD modelling
- open lectures on the base of our industrial partner “REPH” / “Siemens”
- deep knowledge in gas, steam and microturbines.



# Electrical Engineering

The program lectures cover general terms of power systems; basic concept of power system stability, electrical 3-phase system. Fundamental terms of short-circuit currents calculations are introduced. Temporary and surge overvoltages, reactive power compensation means and high voltage cable lines application issues are also considered.

Additionally, the course focuses on load flow analysis methods, synchronous machines' excitation systems and automatic voltage regulators principles of operation and root causes of power system blackouts. Special attention will be paid to the topic Grid Integration of Renewable Energies and e-Mobility.

Active teamwork in small groups on projects of the course will bring deeper understanding of the subject.



## Oil & Gas

The course provides a comprehensive overview of the oil and gas industry from upstream exploration and production to downstream refining, pumping, sales and marketing.

Participants will learn all the subtleties of the processes and technologies of viscous oil extraction, oil preparation and gas recovery under the supervision of leading Russian and International professors and experts. They will gain an appreciation of industry dynamics and the key issues affecting its development and future. This course will provide a thorough foundation for understanding the changing "Oil & Gas" industry dynamics.

Participants will enjoy a hands-on experience through a variety of individual and team exercises and projects, with the opportunity to exchange views and skills with a diverse group of industry peers.



# Nuclear Engineering, Turbomachinery, Electrical Engineering, Oil & Gas

**Programs dates:**

**Arrival:** July 13 – 14, 2019

**Classes:** July 15 – Aug 02, 2019

**Departure:** Aug 03 – 04, 2019

**Duration:** 2 or 3 weeks of studies

**ECTS credits:** 5.0

**Participation fee:**

- **2 weeks:**

Early bird registration fee: 540 euro

Regular Registration fee: 670 euro

- **3 weeks:**

Early bird registration fee: 740 euro

Regular Registration fee: 870 euro

**Deadline for registration:**

- For EU students: June, 16
- For RUS students / who don't need visa: July, 01
- For the rest: May, 12

Request the application form and submit the application package via e-mail: [energyschool@spbstu.ru](mailto:energyschool@spbstu.ru) or [Alena.Aleshina@spbstu.ru](mailto:Alena.Aleshina@spbstu.ru) or register online: <http://energyschool.spbstu.ru/ss/>





# Nuclear Engineering, Turbomachinery, Electrical Engineering, Oil & Gas

## The cultural program includes:

- Boat city tour for students to get acquainted with the beauty of the city;
- Excursion to the Hermitage, one of the world's largest and oldest museums of fine art;
- Trip to Peterhof, world famous for its fountains;
- Picnic at the seashore of the Gulf of Finland where students can enjoy Russian style barbecue;
- Excursion to beautiful suburbs near St. Petersburg with the palaces' visit. Pushkin / Pavlovsk / Oranienbaum;
- Photocross;
- Campus tour;
- Russian language & culture class;
- Closing Ceremony in art space.



## Renewable Energy

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# Renewable Energy, Energy Efficiency and Sustainable Development

## Programs dates:

**Arrival:** August 3 - 4, 2019

**Classes:** August 4 - 16, 2019

**Departure:** August 17 - 18, 2019

**Duration:** 2 weeks

**ECTS credits:** 4.0

**Participation fee: 540 euro**

Participation fee includes tuition fee, study materials, visits to companies and cultural program.

## Cultural program:

- Boat city tour for students to get acquainted with the beauty of the city
- Excursion to the Hermitage, one of the world's largest and oldest museums of fine art
- Picnic at the seashore of the Gulf of Finland where students can enjoy Russian style barbecue
- Excursion to Peterhof palace-ensemble with picturesque gardens, a countless number of fountains and giant golden statues
- Campus tour



# Contacts

**Nuclear Engineering, Turbomachinery, Electrical Engineering,  
Oil & Gas in Energy Industry**

**Program coordinator:**

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**Renewable Energy, Energy Efficiency and Sustainable  
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