



ALAR



ONLINE SUMMER SCHOOL

ELECTRICAL ENGINEERING

JULY 20 - AUGUST 01, 2020

LEARN MORE ABOUT ELECTRICAL ENGINEERING
AND THE MOST BEAUTIFUL CITY OF RUSSIA

ECTS credits: 4.0



POLYTECH

Peter the Great
St. Petersburg Polytechnic
University



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BRIEF DESCRIPTION

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.

Cost:

US\$450- includes registration, teaching costs, 4.0 ECTS credits Certificate, 40 hours online russian language course and ALAR's Certificate

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POLYTECH
Peter the Great
St. Petersburg Polytechnic
University



Program dates: JULY 20 -AUGUST 01, 2020

Registration deadline: July 04th, 2020

Entrance requirements:

- . Basic knowledge in Electrical Engineering
- . Good command of English
- . All classes and out-of-class activities are conducted in English
- . Knowledge of the Russian language is not required
- . Applicants are expected to have at least 2 year of University level studies.

Program partners

- JSC «Scientific and Technical Center of Unified Power System»
- Electroapparat
- South-West CHP
- Power Machines Industry
- Brandenburg Technical University, Cottbus
- Politecnico di Milano

Professors and lecturers

SPbPU professors, leading international professors and guest speakers from companies

Course and calendar description

Please find attached curricula and calendar at the end of this document

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ELECTRICAL ENGINEERING

TIME	MON JULY 20th	TUE JULY 21st	WED JULY 22nd	THU JULY 23rd	FRI JULY 24th	SAT JULY 25th	SUN JULY 26th
10:00	Technology of conventional and renewable power generation	Renewables and SMART Grids	Overhead lines, cables, breakers, grid structures	Basics in power system operation, limitation of RES	Challenges and Technical Options to reduce CO2 from Power Generation		
10:15							
10:30							
10:45							
11:00							
11:15	Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break		
11:30	Technology of generators, 3-phase electric power supply	Renewables and SMART Grids	Power transformers, instrument transformers, coils	Grid extension, extension of storages, sector coupling	Student present best practice cases of RES-Integration from their countries		
11:45							
12:00							
12:15							
12:30							
12:45							
13:00	Consultation						
13:15							
13:30							
13:45							
14:00	Cultural Programme: Lesson 1 *	Cultural Programme: Lesson 2*	Campus Tour	Cultural Programme: Lesson 3*	Cultural Programme: Lesson 4*		Cultural Programme: Lesson 5*
14:15							
14:30							
14:45							
TBA					Live-chat		Live-chat
TBA						White Nights Live	

* - Recommended timing for Cultural Programme

TBA - To Be Announced



ELECTRICAL ENGINEERING

TIME	MON JULY 27th	TUE JULY 28th	WED JULY 29th	THU JULY 30th	FRI JULY 31st	SAT AUG 1st	SUN AUG 2nd
10:00	Digital technologies in RES	The introduction to heat transfer mechanisms and calculation techniques	Introduction to MATLAB/ Simulink	Code generation in MATLAB/ Simulink	The basics of analytical calculation methods		
10:15							
10:30							
10:45							
11:00							
11:15	Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break		
11:30	Digital technologies in RES	The introduction to heat transfer mechanisms and calculation techniques	MATLAB/ Simulink Support Package for Microcontrollers. Project development	External connection of Microcontroller with Simulink	The basics of analytical calculation methods		
11:45							
12:00							
12:15							
12:30							
12:45							
13:00	Consultation						
13:15							
13:30							
13:45							
14:00	Cultural Programme: Lesson 6*	Sport Day	Cultural Programme: Lesson 7*	Cultural Programme: Lesson 8*	Cultural Programme: Lesson 9*		
14:15							
14:30							
14:45							
TBA			Live-chat		Closing Ceremony		
TBA						White Nights Live	

* - Recommended timing for Cultural Programme

TBA - To Be Announced