



ONLINE SUMMER SCHOOL

POWER ELECTRONICS

JULY 20 – AUGUST 01, 2020

FROM MICRO CONTROLLERS ARCHITECTURE
THROUGH MATLAB CODE, UP TO A PROJECT
IMPLEMENTATION - JOIN THIS ONLINE SUMMER
SCHOOL

ECTS credits: 4.0



POLYTECH

Peter the Great
St. Petersburg Polytechnic
University



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Peter the Great
St. Petersburg Polytechnic
University



ALAR



BRIEF DESCRIPTION

Summer School in POWER ELECTRONICS will allow you a deep immersion in electronics behind any modern industry. You will know the most sophisticated micro controllers today, their characteristics, architecture and programming.

Additionally, you will be able to simulate the operation of a productive device under certain requirements through the programming of the micro controller and the regulation of power signals.

Within this course you will be able to design an independent automatic control system with the advice of the best Polytechnic scientists.

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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Program dates: JULY 20 – August 01, 2020

Registration deadline: July 04th, 2020

Entrance requirements:

- . 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 1 year of University level studies.

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

Program partners:

- Gazprom Transgaz Gazprom
- Neft Surgutneftegaz (Kirishi oil refinery)
- Rosenergoatom Rosseti

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POWER ELECTRONICS

TIME	MON JULY 20th	TUE JULY 21st	WED JULY 22nd	THU JULY 23rd	FRI JULY 24th	SAT JULY 25th	SUN JULY 26th
10:00	Introduction. Microcontroller architecture. The inputs and outputs of a microcontroller. Signal types.	Signal processing	Generation of PWM signal using Microcontroller	Design of an automatic control system (Independent work)	Modification of the automatic control system (Independent work)		
10:15							
10:30							
10:45							
11:00							
11:15	Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break		
11:30	Microcontroller programming. Automatic code generation: a modern approach to developing FPGA systems.	Sensors Communication with Microcontroller	Design of an automatic control system (Independent work)	Project Consulting (Feedback mode)	PI&PID controllers Design of closed-loop control systems		
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	



POWER ELECTRONICS

TIME	MON JULY 27th	TUE JULY 28th	WED JULY 29th	THU JULY 30th	FRI JULY 31st	SAT AUG 1st	SUN AUG 2nd
10:00	PI&PID controllers Design of closed- loop control systems	Code Generation and Project Launch (Independent work & Feedback mode)	Introduction to MATLAB/ Simulink	Code generation in MATLAB/ Simulink	Project implementation in Simulink (Feedback mode)		
10:15							
10:30							
10:45							
11:00							
11:15	Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break		
11:30	Stability of control system Closed-loop control setup	Code Generation and Project Launch (Independent work & Feedback mode)	MATLAB/ Simulink Support Package for Microcontrollers Project development	External connection of Microcontroller with Simulink	Project implementation in Simulink (Feedback mode)		
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