POLYTECH
Peter the Great
St.Petersburg Polytechnic
University

International Polytechnic
SUMMER & WINTER
SCHOOLS

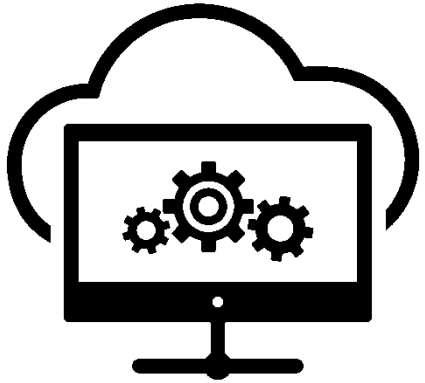
Information Technology

POLYTECH

Programs in the field of “Information Technology”

Summer School

- Computer Modeling and Simulation for Engineers (Polytech – UNED)
- Modern SAP Technologies

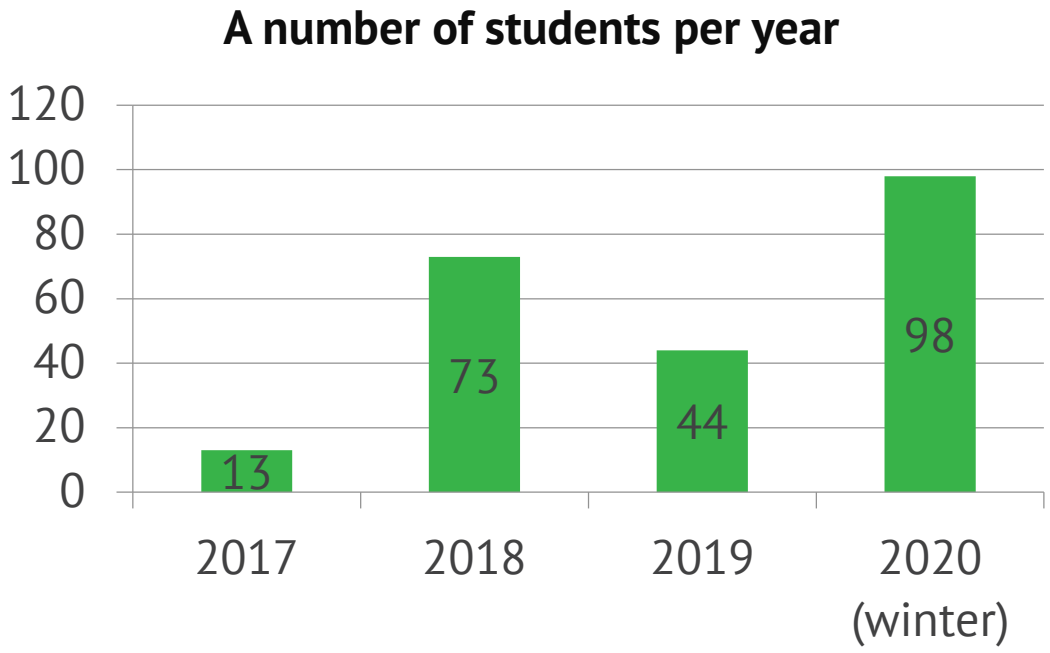


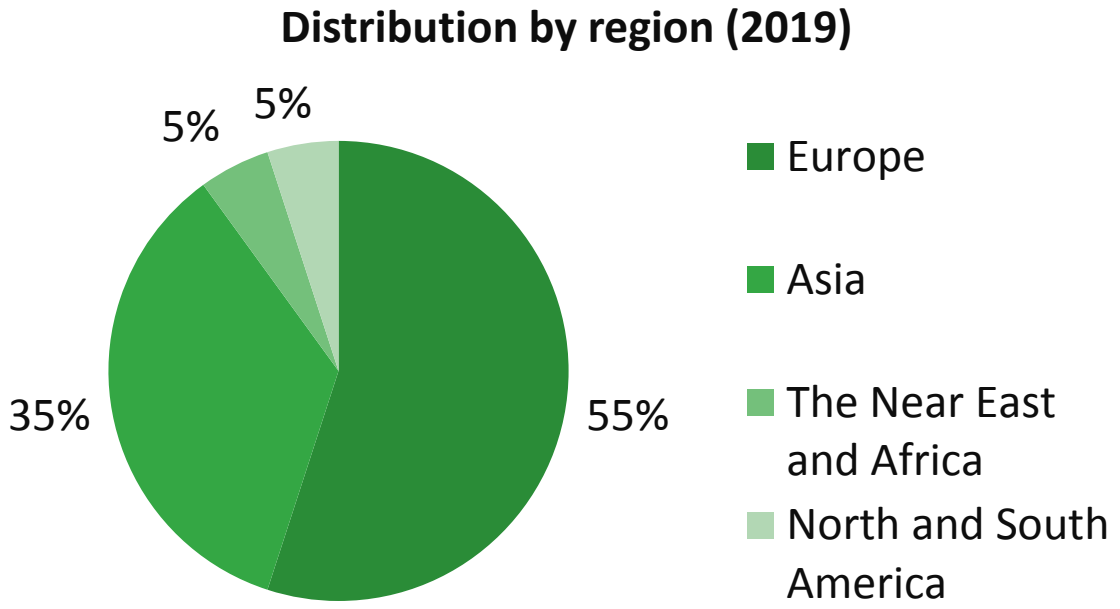
Winter School

- Smart Manufacturing and Digital Future
- Modern SAP Technologies
- Machine Learning: Theory and Application (St. Petersburg - Moscow)

POLYTECH

Key facts





POLYTECH

Winter School in the field of “Information Technology”

JANUARY 27 – FEBRUARY 7, 2020

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Smart Manufacturing and Digital Future

This is a joint program developed in cooperation with Technische Universität Berlin (Germany).

The program provides students fundamental and applied research activities in the field of intelligent robotics and control systems; practicing innovative technologies and hard- and software solutions for the problems of industrial automation and high-tech industrial control systems.

Students analyze the interactive environment of cyber-physical and robotic systems to create new solutions and mathematical models in the field of intelligent robotics and control systems.

Teams of students studies and demonstrate technologies of industrial object remote control, group control of team behavior of collaborative robots and situational control in conditions of uncertainty in the framework of applied developments.

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Modern SAP Technologies

This course describes the fundamental theory of enterprise resource planning systems and shows how the basic business processes interact with the SAP ERP in different functional areas.

- Block 1 (approx.30 classroom hours)
- Overview of SAP ERP and SAP NetWeaver;
- Basic concepts used throughout SAP applications;
- Business processes in FI, CO, MM, PP, HCM and others;
- SAP Solutions Overview.
- Block 2 (approx.10 classroom hours)
- Overview of SAP HANA;
- Architecture of SAP in-memory computing;
- Overview of data provisioning in SAP HANA;
- Modeling with SAP HANA;
- SAP HANA Interfaces to BI client tools.
- Block 3 (approx.32 hours online studies)
- E-Learning, Exercises and Self-tests.

+ 6 hours intensive course of survival Russian language is included into the syllabus

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Smart Manufacturing and Digital Future and Modern SAP Technologies

Programs dates:
Arrival: Jan 25 – 26, 2020
Classes: Jan 27 – Feb 07, 2020
Departure: Feb 08 – 09, 2020

Duration: 2 weeks

ECTS credits:
4.0 (Smart Manufacturing and Digital Future),
5.0 (Modern SAP Technologies)

Participation fee:
Early bird registration fee: 510 euro
Regular registration fee: 540 euro

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

Deadline for registration:
Early bird deadline: October 28, 2019

Regular deadline:
for non-EU citizens: November 18, 2019
for EU, Iranian and Indian citizens, citizens of visa-free countries: December 16, 2019

Request the application form and submit the application package via e-mail: summerschool@spbstu.ru

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Smart Manufacturing and Digital Future and Modern SAP Technologies

- The cultural program for the programs “Smart Manufacturing and Digital Future” and “Modern SAP Technologies” 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).

POLYTECH

Machine Learning: Theory and Application (St. Petersburg - Moscow)

The course introduces students to the theoretical foundations of machine learning and data science, their application in the field of process control and automation, as well as to the solution of real business problems with the help of computer vision, classification and regression algorithms.

The program involves mastering the mathematical apparatus: matrix multiplication, differentiation, the basics of probability theory and mathematical statistics. During the course students will learn how to create a Model predictive controller based on predictive algorithms.

The optimal balance between theory and practice provides both a good foundation and the ability to apply knowledge in practice.

POLYTECH

Machine Learning: Theory and Application (St. Petersburg - Moscow)

Program dates:

Arrival to St. Petersburg: Jan 25 – 26, 2020
Classes:
Jan 27 – Feb 01, 2020 (in St. Petersburg)
Feb 02 – transportation from St. Petersburg to Moscow
Feb 03 – Feb 07, 2020 (in Moscow)
Departure from Moscow: Feb 08 – 09, 2020

Duration: 2 weeks

ECTS credits: 4.0

Participation fee: 510 euro
Participation fee includes tuition fee, study materials, visits to companies and cultural program.

Deadline for registration:
for non-EU citizens: November 18, 2019
for EU, Iranian and Indian citizens, citizens of visa-free countries: December 16, 2019

Request the application form via e-mail address:
summerschool@spbstu.ru

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Machine Learning: Theory and Application (St. Petersburg - Moscow)

First week of the course at SPbPU will cover the following topics:

- Machine learning algorithms review: brief history and prerequisites of ML algorithms, their classification, mathematical description, applications and limitations;
- Artificial Neural Networks (NN) review: structure, classification, steps of development a NN solution, applications examples;
- Machine learning practice (Machine learning libraries, frameworks (Python);
- Code examples. Neural Networks development for prognosis of the manufacturing data);
- Model predictive control (MPC) review: brief history and prerequisites of MPC, classification, MPC controller structure;
- Model predictive control practice: Code examples, MPC development, building of the MPC application, based on prognosis of Neural Networks.

Second week of the course at MISIS will introduce:

- The usage of machine learning algorithms to solve the problem of clustering, regression and segmentation;
- Displaying big data to visualize the results, including methods of reducing dimension;
- Practice on solving business problems (image recognition and clustering, identification of correlations in sales of goods in retail, forecasting events based on historical data);
- Methods and practical exercises on how to analyze incoming data, prepare it for building models, select the optimal parameters of machine learning models, analyze the results and visualize the received data.

POLYTECH

Machine Learning: Theory and Application (St. Petersburg - Moscow)

The cultural program for the program “Machine Leaning” includes:

- Excursion to the Hermitage, one of the world’s largest and oldest museums of fine art;
- Pub Quiz;
- Full-day Wintry Event with sleigh riding and skating (optional for extra price).

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Summer School in the field of “Information Technology”

JULY 13 – 24, 2020

POLYTECH

Computer Modeling and Simulation for Engineers (Polytech – UNED)

This is a joint program developed in cooperation with UNED: National University of Distance Education (Spain).

The course curriculum includes:

- Introduction in Modelica (Dymola, OpenModelica);
- Introduction in MVL (MwStudium, Rand Model Designer).

Introduction in Object-Oriented Modeling is based on two courses «Modeling and Simulation with Modelica for engineers» (prof. Alfonso Urguia, Spain) and «Rand Model Designer for beginners» (prof. Yuri Senichenkov, Russia) developed for InMotion Project.

Modelica and Model Vision Language are object-oriented, equation based modeling languages for modeling and simulation complex dynamical systems. Models of complex dynamical systems are hierarchical, component models with event-driven behavior. Both courses include lectures, practical work and independent work with tools for visual modeling.

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Computer Modeling and Simulation for Engineers (Polytech – UNED)

Program dates:

Arrival: July 13 – 14, 2019
Classes: July 15 – 26, 2019
Departure: July 27 – 28, 2019

Duration: 2 weeks
ECTS credits: 4.0

Participation fee:

- **Early bird registration fee:** 510 euro
- **Regular registration fee:** 540 euro

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

Deadline for registration:
Early bird deadline:

- for non-EU citizens: March 25,2019

Regular deadline:

- for non-EU citizens: April 22, 2019
- for EU-citizens and citizens of visa-free countries: June 17, 2019 (applicable for Iranian and Indian citizens as well)

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Computer Modeling and Simulation for Engineers (Polytech – UNED)

Curriculum:

- Isolated models based on differential and difference equation / lectures;
- Simple dynamical systems / practical workshop;
- Hybrid system and State Machines / lectures;
- Event-driven behavior: bouncing ball, ideal diod / practical workshop;
- Classes, objects, inheritance, packages and libraries / lectures;
- Components with inputs/outputs («Causal» modeling) / lectures;
- Control systems: PID regulator / practical workshop;
- Components with contacts/flows («Physical» Modeling) / lectures;
- Electrical and Hydraulic component systems / practical workshop.

Professors and lecturers:

- Prof. Alfonso Urquia, UNED, Spain
- Prof. Carla Martín-Villalba, UNED, Spain
- Prof. Yuri Senichenkov, Polytech, Russia.

Program partners:

- UNED: National University of Distance Education, Spain)

POLYTECH

Modern SAP Technologies

Block 1 (approx.30 classroom hours)
- Overview of SAP ERP and SAP NetWeaver;
- Basic concepts used throughout SAP applications;
- Business processes in FI, CO, MM, PP, HCM and others;
- SAP Solutions Overview.

Block 2 (approx.10 classroom hours)
- Overview of SAP HANA;
- Architecture of SAP in-memory computing;
- Overview of data provisioning in SAP HANA;
- Modeling with SAP HANA;
- SAP HANA Interfaces to BI client tools.

Block 3 (approx.32 hours online studies)
- E-Learning, Exercises and Self-tests.
- Block 4 (approx.6 classroom hours)
- Intensive course of Survival Russian.

Students will get acquainted with the solutions for enterprise management based on SAP ERP and analytical solutions based on SAP HANA

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Modern SAP Technologies

Program dates:
Arrival: Aug 03 – 04, 2019
Classes: Aug 05 – 23, 2019
Departure: Aug 24 – 25, 2019

Duration: 3 weeks

ECTS credits: 5.0

Participation fee:
Early bird registration fee: 680 euro
Regular registration fee: 710 euro

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

Deadline for registration:
Early bird deadline: April 15, 2019
Regular deadline:

- for non-EU citizens: May 13, 2019
- for EU and visa-free countries' citizens: July 01, 2019 (applicable for Iranian and Indian citizens as well)

Request the application form and submit the application package via e-mail: summerschool@spbstu.ru

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Modern SAP Technologies

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.
- Pub Quiz in the city center of St. Petersburg.
- Visit to the "Baltika" Brewery/"Coca-Cola" factory where students can learn about the construction and logistic peculiarities of the plant.
- Excursion to Peterhof palace-ensemble with picturesque gardens, a countless number of fountains and giant golden statues.
- Picnic at the seashore of the Gulf of Finland where students can enjoy Russian style barbecue (optional, for extra price).
- Excursion to Pushkin, former tzar summer residence famous for its palace and park ensemble. Students will visit the outstanding Catherine Palace with glorious Amber room (optional, for extra price).

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Contacts

International Education Office

Department of International Educational Programs

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