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# **Practical-oriented Online Courses and Skills Training in the ‘Polytech’ Joint International Educational Programmes**

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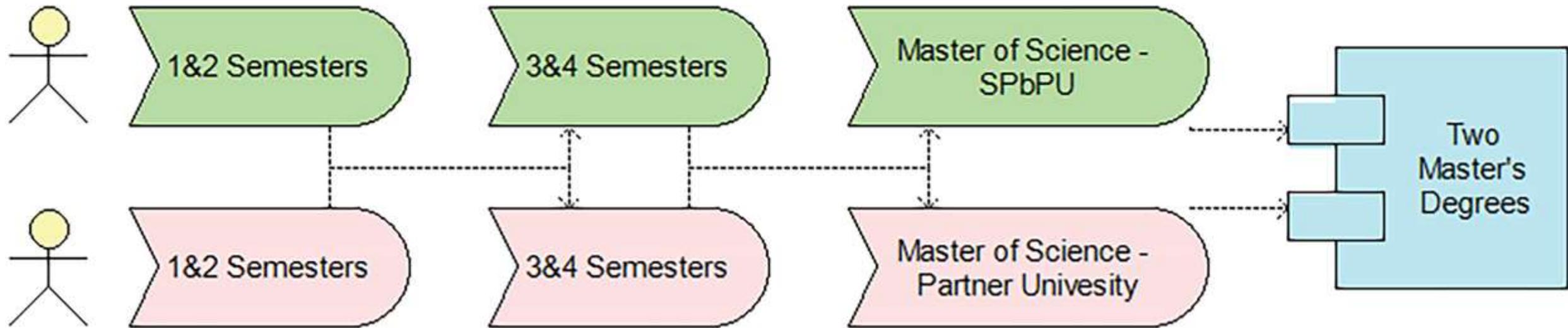


# Introduction

International academic cooperation keeps actively developing in constantly changing world. Interest of Russian students in studying abroad and interest of foreign students to study in Russia is keep on growing. One of the directions of international academic cooperation is development and realisation of international educational Master's degree programmes particularly in cooperation of Russian partner university and European partner university. Peter the Great St. Petersburg Polytechnic University has very wide experience in developing and realisation this kind of programmes.



# Structure of educational process in Master double degree programme





POLYTECH

# Synergy Centre

- ◆ Higher School of Cyber-Physical and Control Systems, Institute of Computer Science and Technologies

<http://hscpsc.spbstu.ru>



- ◆ North-West Regional Intercollegiate Education and Research Centre SPbPU-FESTO «Synergy»

<http://english.spbstu.ru/structure/educational-scientific-center-spbspu-festo-synergy/>



- Laboratory of intelligent systems for data processing and control systems
- Laboratory of motion control systems for robotics
- Laboratory of complex automation and control
- Laboratory of electronics and electrical drives



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# APPLE+ Courses

- Digital devices and microprocessors
- Digital Signal Processing
- Embedded System Development
- Advanced Microelectronics and CAD tools for design of systems on chip
- Electronic Design and Assembly
- Innovation Strategy Management and Product Design and Development



POLYTECH

# Winter School





POLYTECH

# Open Network Championship WorldSkills in the competence of mechatronics in the laboratory of the Centre in May 2018





# Distance Learning Course

Starting from 2015 Peter the Great St. Petersburg Polytechnic University is actively developing distance learning courses on the platform Open Education. One of the courses is "Modern industrial electronics." The course introduces basic components of modern systems industrial electronics:

- subsystem for data acquisition and processing (sensors, various means of measurement);
- actuating elements;
- control devices - industrial controllers;
- channels for data collection, transmission and processing - industrial networks, combines the individual elements into a system;
- SCADA systems, providing interaction with a human operator controlled equipment, and allows to control its operations.



# Distance Learning Course

Students acquire the following skills:

- Choose, create and maintain complex software and hardware by computing and information systems and networks;
- Formulate and solve circuit engineering problems associated with the choice of the elements requirements for specified parameters APCS;
- Install, test, test and use hardware and software
- Means of computer information systems and automation systems.



# Conclusions

Synergy Centre at Peter the Great St. Petersburg Polytechnic University works in the areas of intelligent systems for data processing and control, motion control systems for robotics, complex automation, electronics and electrical drives. Main efforts have been done for more efficient use of the intellectual potential and high-tech equipment available at the laboratories, particularly for developing new innovative educational programs.

Experience of joint programmes implementation showed that developed materials and techniques can be successfully used in educational programmes such as summer and winter schools, research training programs of students, international semesters, etc. This can be the basis for innovative educational programs in the field of information technology, control systems and automation.