

Semester in English "Introduction to Metallomics"

Peter the Great St. Petersburg Polytechnic University

Degree or qualification is awarded:

Internationally Recognized SPbPU Certificate with list of completed courses, grades and ECTS

Language of study: **English**

Mode of study:

Duration: **18 weeks**

Availability of free education: **no**

Price: **1985 euro**

Programme webpage at the university website:

<http://english.spbstu.ru/education/programs/programs-in-english/semesters-english/introduction-metallomics/>

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High social impact of oncology, neurodegenerative and cardiovascular diseases and the need for understanding of the mechanisms underlying homeostasis of trace elements guarantee high demand in specialists which will study the proposed Program.

Program dates: beginning of September – mid-January

Participants: international and Russian students.

Prerequisites: undergraduate students – four years of Bachelor level studies, with good command of Molecular Biology, General and Organic Chemistry, and English.

Teachers: Professors from St. Petersburg Universities; visiting Professors from European and USA partner Universities. All the teachers involved in the Program have publications in the area of metallomics in well-recognized scientific journals.

Training methods: lectures, case studies, laboratory practices

Credits: 30 ECTS credits per semester

Program Scheme: Compulsory courses + seminars + laboratory practices + Interdisciplinary project. Compulsory courses, seminars and laboratory practices are obligatory.

WHY study in the semester of Introduction to Metallomics?

The Program was developed to fill the gap in the training of modern specialists in molecular biology and medicine that was caused by the rapid advance of metallomics, which revealed the crucial role of trace elements as catalytic and structural co-factors of vitally important enzymes, signaling molecules, cell cycle regulators, as well as participation of these elements in the development of many socially important diseases. The Program can be recognized as a semester abroad. It implies that the students have knowledge of basic inorganic and organic chemistry, biochemistry and molecular biology of the cell. The Program is designed for those who plan to investigate cell differentiation and cell cycle; study the origins of multifactor diseases and the influence of microelement misbalance during embryonic and early postnatal development; create new generation baby formulae, which match breast milk by trace element availability, or optimal livestock feeds.

The program courses are conducted in English. Study methods emphasize students' active participation and involvement. Case studies, group discussions, and laboratory practices are an integral part of the learning process in addition to lectures. Within the program students are assigned to develop interdisciplinary project where they will be

able to use all knowledge they obtained during the program and to apply it to practice.

University administration and Russian tutor students will make staying of visiting students pleasant, comfortable and safe and will help them settle in and explore the metropolis of 5 million inhabitants.

Program Content:

Compulsory Courses:

- Inorganic biochemistry: 2 ECTS
- Analytical chemistry: 2 ECTS
- Trace elements as metalloenzyme co-factors: 2 ECTS
- Molecular neurophysiology: 2 ECTS
- Molecular genetic mechanisms of microelement homeostasis: 2 ECTS
- Biomolecular modeling: methods and examples from computational metallomics: 2 ECTS
- Microelements in signaling, apoptosis, carcinogenesis and neurodegeneration: 2 ECTS
- Modern problems of metallomics: 2 ECTS
- Practice scientific work (atomic absorption spectroscopy, molecular cloning, coordination chemistry): 8 ECTS
- Interdisciplinary Project: 6 ECTS

Specializations within this programme