| Program name         | Specialist’s degree program  
|---------------------|-----------------------------  
|                     | Radio navigation systems and complexes  |
| Key facts           | The program is designed to train specialists in the field of radio electronic systems and complexes, and includes research and development aimed at creating and ensuring the functioning of devices, systems and complexes based on the use of electromagnetic waves and intended for transmitting, receiving and processing information, obtaining information about environment, natural and technical objects, as well as impact on natural or technical objects in order to change their properties.  |
| Program length      | 5.5 years  |
| Starting date       | September, 1st  |
| Language of instruction | Russian  |
| Prerequisites       | - School leaving certificate of secondary (full) comprehensive education, certificate of vocational education or diploma of higher education  
|                     | - Entrance exams in Physics, Informatics and ICT, Maths, Russian Language  
|                     | - preference is given to students who have previously participated in creative contests and (or) olympiads of the corresponding field of study  |
| Tuition fee per year | 170 622 roubles (~ 2,297 USD)  |
| Program leader/team | Head of Department:  
|                     | Felix Zander, Cand.Sc. (Engineering), assistant professor  
|                     | Head of the Department of Electronic Systems, School of Engineering Physics and Radio Electronics, Siberian Federal University  |
| Qualification       | Engineer  |
| Skills/ objectives  | - analysis of the state of the scientific and technical problem on the basis of the selection and study of literary and patent sources;  
|                     | - definition of the goal and statement of design tasks;  
|                     | - coordination of technical conditions and tasks for the designed radio-electronic system, calculation of the main indicators of the quality of the radio-electronic system;  
|                     | - development of technical specifications, requirements and conditions for the design of individual subsystems and devices;  
|                     | - development of structural and functional diagrams of radio-electronic systems and complexes and schematic diagrams of devices using computer design tools, carrying out design calculations and feasibility studies of decisions;  
|                     | - design of structures of electronic devices;  
|                     | - selection of optimal design solutions at all stages of the design process from the technical assignment to the production of products that meet the goals of functioning, production technology and ensure the characteristics of the object that determine its quality;  
|                     | - issuance of technical documentation, including operating instructions, test programs, technical conditions;  
|                     | - participation in adjustment, testing and commissioning of prototypes of radio electronic devices and systems;  
|                     | - construction of mathematical models of objects and processes; selection of a method for their research and development of an algorithm for its implementation;  
|                     | - optimization of radio electronic systems and complexes using statistical, variation and other methods;  
|                     | - modeling of objects and processes in order to analyze and optimize their parameters using available research tools, including standard packages of applied programs;  
|                     | - implementation of an experimental research program, including the choice of technical means  |
and processing of results;
-drawing up reviews and reports based on research results;
-operation and maintenance of radio electronic systems and complexes;
-repair and adjustment of radio electronic devices.

In accordance with the speciality **Radio navigation systems and complexes**:
-implementation of a reasonable choice of structural diagrams of equipment for radio navigation systems and complexes;
-analysis of tactical and technical indicators of equipment of radio navigation systems and complexes;
-optimization of equipment of radio navigation systems and complexes;
-estimation of errors of navigation measurements, modeling of the equipment of the radio navigation system;
-conducting a technical and economic analysis of the prospects for the development of satellite navigation technologies.

**Curriculum**

- Philosophy;
- History;
- Foreign language;
- Vital activity safety;
- Physical education;
- Economics and organization of production;
- Jurisprudence;
- Mathematics;
- Information Technology;
- Physics;
- Ecology;
- Engineering and computer graphics;
- Fundamentals of circuit theory;
- Radio materials and radio components;
- Metrology and radio measurements;
- Radio circuits and signals;
- Digital devices and micro-processors;
- Microelectronics;
- Circuitry of analog electronic devices;
- Fundamentals of Computer Design and Modeling of Radio electronic Means;
- Radio automatics;
- Electrodynamics and propagation of radio waves;
- Ultra-high frequency (microwave) devices and antennas;
- Digital signal processing;
- Physical foundations of electronics;
- Circuitry of digital devices;
- Electroconverting devices of radio electronic facilities;
- Signal generating and conditioning devices;
- Signal receiving and processing devices;
- Certification and standardization of electronic devices;
- Radar systems;
- CAD;
- Radio navigation systems;
- Methods and means of radio navigation measurements;
- Satellite systems for navigation, communication and surveillance;
- Design of radio navigation systems;
- Technical operation of radio eletronic equipment;
- Management Basics;
- Fundamentals of design and production technology of radio-electronic devices

**Contacts**

E-mail: kafedrares@mail.ru, FZander@sfu-kras.ru.
Tel: +7 (391) 249-77-52
Address: 28б, ul. Kirenskogo, Room Б-417