

SPb "Metropolitan College"

Saint Petersburg is one of the largest metropolis of the world and to imagine a city without a subway is impossible today. Therefore, the task of staff training for the **metropolitan** is very relevant. A priority of the College is the development of innovative education focused primarily on the interests of the city, the strategic partnership between our institutions and the **St. Petersburg metropolitan**, other enterprises of the city, on increasing prestige of working professions.

"**Metropolitan College**" is the only educational institution in Saint Petersburg and Russia in the field of professional training for the metropolitan. Highly professional engineering-pedagogical staff widely uses innovative educational technologies, modern computer software and hardware; it also implements a system of workers and specialists training for the metropolitan according to the new federal educational standards and requirements of the employer.

Today, in terms of rapid changes in the field of education, the College staff retains the best of what has been done for more than 40 years of existence of our educational institution, and also strives to meet all the requirements that dictate the current operating conditions.

Our main objective is to prepare skilled workers and specialists who are competitive on the labor market, competent, responsible, fluent in their profession and able to navigate in related fields of activity, capable to effective work at the level of world standards, ready to constant professional growth, social and professional mobility.



The College makes every effort to keep its graduates finding their worthy place in life and being able to apply the received knowledge into practical activities.

The birthday of SPb "Metropolitan College" - September 2nd 1974
Base enterprise - SUE "Saint Petersburg metropolitan".

The country's first and currently the only educational institution for the training of qualified workers and specialists for the metropolitan.



Teaching staff on 01.09.2016

Teachers - 26

Vocational tutors - 13

Number of students on 01.09.2016 – 508

Number of groups - 19

On the basis of basic general education (9-year education) - 2 years and 10 months of training:

With the assignment of working qualification of a worker

1. A mechanic on repair and maintenance of rolling stock
2. An electrician on devices of signaling, centralization, blocking (SCB)
3. An electrician of traction substation
4. A mechanic-electrician of metropolitan (escalators)
5. A machine operator (Metalworking)

On the basis of basic general education (9-year education) – 3 years and 10 months of training:

With the assignment of qualification of technician

1. Automation, telemechanics on transport
2. Electricity supply for transport
3. Informational systems on transport

A set of training in the College is made in accordance with the application of base enterprise and other enterprises of the city, and the state order of St. Petersburg for training skilled workers and mid-level professionals formed on their basis.

Students' practical training contracts are entered with the structural units of the SUE "St-Petersburg Metropolitan" every academic year. For the 2016-2017 academic year 8 students' contracts has been entered with a depot "Avtovo", depot "Dachnoe", depot "Moscowskoe", depot "Nevskoye", depot "Vyborgskoye", Power Supply Service, Escalator service, Service of Signaling, Centralization and Blocking.

Employment of graduates is in accordance with the application base of the enterprise to the training of skilled workers and professionals.

Educational-material base of the College is:

- 14 – classrooms for general subjects;
- 5 – offices for the subjects of professional cycle;
- 3 – offices with computer equipment;
- 8 – training workshops, laboratories, landfills;
- 1 – stadium;
- 1 – general gym;
- 1 – gym;
- 1 – library;
- 1 – health center;
- 1 - dining room with buffet;
- 1 – assembly hall.



What we are taught ...

A mechanic on repair and maintenance of rolling stock



Reliable operation of the metropolitan requires constant maintenance of rolling stock in terms favorable for transportation constantly increasing passenger traffic.

Rolling stock of the metropolitan consists of motor cars designed for transport passengers, special cars (for technical purposes) and rail motor vehicles for transporting household goods.

During the intense rolling stock operation it is gradually losing its working efficiency. From this point the attention of a mechanic on repair of rolling stock is required to restore its lost working efficiency.

A mechanic on repair of rolling stock repairs and fabricates parts of the serviced equipment, parses the nodes of the rolling stock; makes installation and removal of separate devices of pneumatic system; checks the action of pneumatic pressure equipment under compressed air; regulates and tests separate mechanisms. The profession imposes an increased requirement of physical strength and endurance of a specialist, his visual acuity, flexibility and mobility of the arms, legs and body, a vestibular apparatus. He must have good hand-eye coordination, spatial

imagination and technical thinking.

A mechanic on repair of the rolling stock must know safety rules when working on rolling stock, methods of failure detection and repair policies, rules of technical operation of equipment purpose and operation of systems of train automatic driving.

A mechanic on repair of a rolling stock should carry out fitting and maintenance work; read the fundamental power circuit and the control circuit of electric locomotives; know the checking rules of the action of pneumatic equipment under pressure of compressed air, specifications for testing and adjusting separate mechanisms of a rolling stock. This profession is the first step on the way to profession of a machinist of the metropolitan electric train.



An electrician on devices of signaling, centralization, blocking (SCB)

SCB stands for "signaling, centralization, blocking". To put it simply, signaling is an indicator of any signals such as traffic lights.

Centralization is the place from where commands to the metropolitan equipment (traffic lights, arrows, track circuit, etc.) are given from, that is, an office of electric centralization, or a station or dispatch. Blocking is an automatic (sometimes semi-automatic or mechanical) system to shut down any of the roads in the metro tunnel with lights or hitchhiking.

An electrician SCB monitors the correct operation of lights, switches, and relay racks at a station or office of centralization. On the track circuit there are also elements that electricians serve, these are





jumpers that are installed between adjacent track circuits, butt connectors. At every traffic light, railroad switch, track box there are leading cables. And all this are also in the service of electricians SCB.

Devices of signaling, centralization and blocking are an important element in the complex of technical means of the metropolitan providing transportation process.

In connection with necessity of maintenance and repair of installed equipment there is a constant demand for professionals with skills to repair the specified equipment, and electricians on signaling, centralization, blocking.

An electrician SCB ensures trouble-free functioning and safe operation of devices of signaling, centralization and blocking. He needs to have a good vision and colour distinction, have a developed sense of balance, physical endurance, flexibility and coordination of movements of palms and fingers, a sufficient level of development of creative and visual-active thinking. The work is contraindicated for people suffering from diseases of musculoskeletal system, with severe diseases of the heart, lungs, blood vessels, eyes, nervous system.



An electrician of traction substation



Traction substations are one of the main elements of the metropolitan and in some cases play a crucial role in a reliable operation of this extremely important for our city transport.

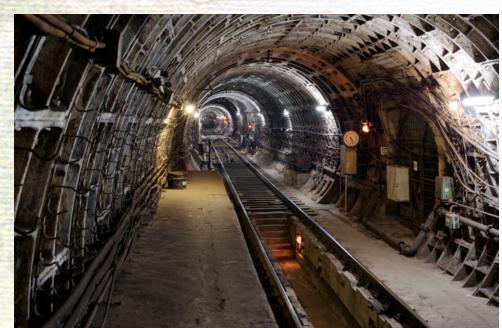
The electricity supply of the metropolitan to power the trains is supplied from a common grid of the city. Alternating current is converted to direct current at traction substations which are placed along the line at a distance of several kilometres from one another. From current collectors, electrical energy is supplied to electric motors, called

traction, which result in rolling stock in motion.

An electrician of traction substation provides reliable and failsafe operation of that complex electrical equipment, switches, contactors and other devices of traction substations, improving and implementing their maintenance and repair.

An electrician of traction substation must have good vision and colour distinction, have a developed sense of balance, physical endurance, flexibility and coordination of movements of palms and fingers, a sufficient level of development of creative and visual-active thinking.

An electrician of traction substation needs to know: electrical and wiring diagrams of electrical equipment of traction substation; assignment, device, principle of operation, the sequence of disassembly and assembly of traction substation equipment; basic types of damage and malfunctions of traction substation equipment; basic types of fasteners fixtures, brands of wires and cables used in traction substations.



A mechanic-electrician of metropolitan



When the residents of our city met a new form of public transport, the metropolitan had only twenty-one "running stairs" - escalators. Currently, there are over 200 of them. Four-lined escalators are at all newly built station. Until 1970, the management of the escalators was carried out manually. In the engine room there was a machinist with an assistant who in case of a sudden stop of stairs was to ensure a quick start.

Since 1980 a system of automatic and remote control of escalators was introduced. Automatic and remote control allowed not only more rapid turn on and switch the escalators, it almost took away the hard order of duty for the staff, and after some time gave the opportunity to move to more complex tasks - implementation of Supervisory control of escalators with the use of telemechanics and television.

Technical progress and the installation of sophisticated equipment in the metropolitan resulted in the need for specialists who could maintain and repair the installed equipment. Currently, these types of work are performed by workers, plumbers, electricians of the metropolitan.

A mechanic-electrician of the underground performs: - the maintenance and repair of equipment of different types of metal and escalators of the metropolitan; - the maintenance and repair of equipment operated in the engineering devices of the subway, the station and tunnel structures.

A mechanic-electrician on maintenance and repair of equipment of various types, steel and escalators of the metropolitan provides reliable and failsafe operation of electrical equipment, circuit breakers, contactors, mechanical equipment, escalators, and other devices, carries out their maintenance and repair.

A mechanic-electrician must have good vision and colour distinction, have a developed sense of balance, physical endurance, flexibility and coordination of movements of palms and fingers, a sufficient level of development of creative and visual-active thinking.

The work as a mechanic-electrician is contraindicated for people suffering from diseases of musculoskeletal system, acute diseases of the heart, lungs, blood vessels, eyes, nervous system.



Information systems

Even back in the XVII century, to create a mathematical table, or to analyze the data dozens of scientists were involved. It was very heavy mental work. The first kind of computer was invented in the USA in 1946, it was huge and did not resemble modern compact electronic computers.

Thanks to the scientific progress of today, there are the following types of computers: game consoles, laptop, handheld, tablet, desktop and mini-desktop. To prepare the data on various electronic media, we turn to the services of a specialist in information systems. Often this profession is still called a PC operator.





accounting, and personnel work.

Where can specialists of this profile apply their knowledge and skills? Because the operator is an office worker, his services are used by various recruitment agencies, consulting and call centers, as well as libraries and archives, and of course his skills are indispensable in the computer center of the subway service in information technology.

Perseverance, diligence and mathematical intelligence are the main criteria of success of a master of processing of digital information. This specialist works primarily in a sitting position at the computer. Most often he has to work alone and in a team. It is desirable for a master of digital information processing to be a communicative and accommodating person.

A specialist in information systems monitors to avoid loss of information, so he conducts a thorough diagnostic of application programs and peripheral devices. In addition, his duties may include the control over the technical condition of a computer, monitor, printer, or scanner.

The potential of a specialist in this profession is huge. After all, knowledge of PC today is almost the main requirement for modern workers in almost all spheres.

For a specialist in information systems the Internet is a native home and the Internet platform for self-realization.



Automation and telemechanics on transport



Automation and remote control devices, or, as they are usually called, signaling, centralization and blocking (SCB), are intended to automate the processes connected with train traffic control, security and bandwidth, and increase productivity.

Usually automation systems regulate, control, and manage objects, when the distance between them is small. If the objects are far removed from each other, the Supervisory system is used instead of the automation systems.

The movement of trains, train and shunting work at stations is carried out under conditions of continuously changing environment. In such situations for rapid transmission of orders and instructions of the engineer and other workers associated with the movement of trains signaling is applied. It allows regulating the movement of trains on stages, train and shunting work at stations and ensuring traffic safety.



At the present stage the Metropolitan is impossible without automation and remote control (SCB). With the help of signaling bandwidth sites, traffic safety and work culture increase. Thanks to the autolock system several trains can move on the stretch simultaneously next to each other with intervals of just a few minutes. A technician-electrician should be able to perform maintenance and repair of the above devices, identify and solve problems and damage quickly and competently.

Graduates can work as: foremen, technicians, electromechanics in maintenance and repair of systems of automation and telemechanics in signaling and communication, electromechanics in the laboratories of automatics and telemechanics, technicians in engineering organizations. By acquiring work experience they can take the position of a senior electrician, a section chief.



Electricity supply for transport



automated control systems. These systems consist of electronic and logic circuits, amplifiers, code series transmitting and receiving telemetry subsets.

The demands to all of these devices are very strict, as staff and passengers security and uninterrupted reliable operation of all electrified lines depend on their work.

Every graduate of this specialty must be mature, focused, possess logical thinking, learn to calculate every action in the workplace a few steps forward, be able to solve any unusual problem, because the work involves risk to life of personnel and passengers.

The main task of a technician-electrician is skilled maintenance, repair, installation, adjustment of devices, objects of electrified lines. All data work must be performed accurately and consistently according to the approved schedules of planned preventive works.



This specialty refers to the professions related to the safety of train movement, so the requirements to the state of health of applicants are quite high. An electrical technician must be familiar with the device, principle of operation and rules of operation of all traction equipment and transformer substations, contact networks, electric networks, systems of automatics and telemechanics in the energy sector. He should not be lost in emergency situations to make the right decisions on troubleshooting.

Graduates of this specialty can work as technicians at the metropolitan, technicians at design institutions, as well as technicians-electricians at the city enterprises.

