ENGLISH EXAM HELPER

CONTENT

Kiev – 2014

THEMES

1. THE KPI

The Kiev Polytechnic Institute is one of the oldest and largest higher educational institutions in our country. It was founded in 1898 and had only four faculties: mechanical, chemical, engineering, and agricultural. At that time the number of students reached three thousand. The first rector of the KPI was professor Kirpichov, an outstanding scientist in the field of mechanics and strength of materials.

The names of many prominent scientists can be mentioned in connection with the history of the National Technical University of Ukraine. Dmytro Mendeleev, the creator of the periodic system of chemical elements, was the head of the first examining board of the KPI. The distinguished naturalist Timiryazev gave much effort to the organization of the agricultural faculty of the KPI. He helped to recruit qualified teachers, doing fruitful research and academic work. Igor Sykorsky (1889-1972), without doubt, a superstar of world aviation, the world-wide famous, talented pioneer and designer of helicopters, hydro-planes (clippers) and heavy multi-engine aircraft studied at the KPI in 1907-1909.

Academician Stepan Timoshenko, one of the founders of the Ukrainian Academy of sciences, the elected member of the academies of sciences in Ukraine, Russian, Poland, France, the USA, Italy, American Philosopher's society, Royal society of London and the honorary doctorate of the Universities of Michigan, Zurich, Glasgow, Munich, Bologna, Zagreb, Turin, the holder of the most prestigious awards in science was one of the most brilliant lecturers and professors at the strength of materials faculty of the KPI. Timoshenko's article published in the Kiev Polytechnic News Bulletin found a wide application in shipbuilding. In fact, the steel plates used in the ships, were tested for tensile strength based on Timoshenko formulae. Timoshenko's textbook on the strength of materials was translated into many foreign languages and many engineers used it and will use it in their studies. In 1911 Timoshenko was awarded the Zhuravskiy Award, which was awarded only once every decade for the best work in construction mechanics. In 1922 Timoshenko was awarded the Lever medal by Franklin Institute for his work on suspension bridges in New York. The same year he presented his research on crank shafts at the American society of engineers.

There is a museum of History of the KPI, where the students and guests may get acquainted with its past and development of engineering in Ukraine. The KPI wrote a glorious page in the history of the Great Patriotic War. During the Second World War (1941-1945) the teachers and students of the KPI glorified their University, giving their lives for the liberation of our Motherland. There is a monument to them at the entrance of the KPI park. According to tradition on the first of September (the beginning of the new academic year), a special delegation of the first-year students, professors and teachers of the KPI come to the monument to lay flowers and express their gratitude to the heroes who sacrificed their lives defending their Homeland.

After the War the KPI had to overcome many difficulties. In fact, it had to begin its life anew. Since then, the KPI had made great progress. The teaching staff of the KPI consists of highly qualified teachers, professors and scientists. They do their best to provide the students with all-round scientific and technical education. Engineers-

graduates of the KPI work all over Ukraine and abroad, introducing the latest achievements of science and technology. Many graduates and post-graduates of the KPI have become famous scientists (Sergey Korolyov, the first designer of space rockets, Boris Paton, Director of the Institute of Welding and the Former President of the Ukrainian Academy of Sciences and many others) At present the number of students in the KPI exceeds 41800. The KPI has 23 educational faculties, 8 educational research institutes, 13 research institutes and 10 engineering centers with 44 academicians and correspondent members of Academies of Sciences, over 1,672 professors and associate professors, 1412 senior teachers, 2,750 assistants and scientific researchers. The KPI University campus includes 23 academic buildings, 22 hostels (3 for married students), a sports center with a swimming pool that meets the Olympic standards, a library, containing nearly 3mln volumes, and a concert hall. The students have at their disposal many large lecture rooms and labs, equipped with the most up-to-date equipment. Many students do independent research work in the student scientific societies and design bureau.

There are 23 faculties and institutes of the KPI. They are: Applied Systems Analysis Institute, Energy Saving and Energy Management Institute, Institute of Physics and Technology, Institute of Mechanical Engineering, Military Institute of Telecommunications and Information, Institute of Telecommunication systems, Aircraft and Space Systems Faculty, Applied Mathematics Faculty, Chemical Engineering Faculty, Chemical Technology Faculty, Electronics Faculty, Welding Faculty, Biotechnology Faculty, Sociology Faculty, Physical Training and Sports Faculty, Radio engineering Faculty, Management and Marketing Faculty, Publishing and Polygraphics faculty, Linguistics faculty, Law Faculty, Heat Power Engineering Faculty, Precision Instruments Faculty, Information and Computer Engineering Faculty. They offer a great number of training programs: automation and electric drive, mining deposits of useful minerals, mine and underground construction, ecology and environmental protection, electromechanical systems, hydraulic and pneumatic machines, boilers and reactors, electric power stations, heat power stations, computer systems and networks etc.

As Ukrainian economy is market oriented, our country needs well-trained engineers and managers to be in the vanguard of technical progress. It’s a great honor to be a student of the KPI.

BACK TO CONTENT

2. UKRAINE AND ITS CAPITAL

Ukraine is one of the largest countries of Europe. It is one of the member states that founded the UNO.

On December, 1, 1991 Ukraine became an independent sovereign state and the president was elected by direct vote. Now Ukraine has its own territory the highest and local bodies of state power and the government, its own national emblem, state flag and anthem. The population of the Ukraine is more then 46 million people. Most of its territory consists of plains. Mountains are situated at the West and South of the country.

President is the head of the state. He is also Commander-in-Chief of Armed Forces of Ukraine. The Supreme Council is the highest organ of state power and the highest legislative body in the state. The Cabinet of Ministers of Ukraine is the highest executive and administrative organ of the state. The highest organ of Judicial power of Ukraine is the Supreme Court.

Ukraine is a mighty industrial and agricultural state with advanced culture, science and art. Ukraine establishes relations with countries throughout the world.

Ukraine maintains close ties with all the members of the Commonwealth of Independent States and is going to cooperate with them. Ukraine has proclaimed itself a nuclear free state and is going to destroy all nuclear weapons on its territory.

The Hero-city of Kiev is a capital of the Independent Ukraine. It is a great political, administrative, industrial, scientific, cultural and educational center with a population of approximately three million inhabitants. Kiev was founded more than 1500 years ago. Ukrainian Supreme Rada, president and the Cabinet of Ministers are located in Kiev.

Kiev is a famous not only for its history, but for its beauty, for the abundance of place of historic interest in it. It is situated on the banks of the Dnipro River. There are many factories in Kiev. They make different products. In Kiev there are many museums, monuments, theatres, cinemas, libraries and palaces. Thousands of students study at Kiev-Mohyla academy, at Kiev Politechnic University, other many institutes and colleges. Kiev is a large transport center. Kiev metro is very beautiful. The city is very green. It is one of the most beautiful cities of Ukraine.

Kiev's monuments of the past attract a lot of visitors. They are impressed by Kiev-Pechersky Monastery which stands on the green hill above the Dnieper, St. Sophia's Cathedra which is a state architectural and historical preserve, the Golden Gate, Shevchenko Memorial, Vydubetsky Monastery, Askold's Grave and others. In the park of Immortal Glory there is a Tomb of Unknown Soldier, over which an eternal fire burns.

There are a lot of museums in Kiev: the Historical Museum, the Museum of Ukrainian Art, the Museum of Russian Art, the Museum of Western and Oriental Art, Shevchenko Museum, Lesya Ukrainka Memorial Museum and others. Kiev is a center of Ukrainian culture. Many research institutes and higher educational establishments are to be found here. It is famous for its theatres and concert halls. Khreschatyk is the main street in Kiev. It is not very long, but it is wide and straight. A lot of people go to Khreschatyk every day. Some of them go shopping. Other people go to the cinema, look at the fountains or sit on the benches.

BACK TO CONTENT

3. GREAT BRITAIN AND ITS CAPITAL

The United Kingdom of Great Britain and Northern Ireland is situated on two large islands called the British Isles. Great Britain consists of England, Scotland and Wales. Ireland consists of Northern Ireland and the Irish Republic.

No place in Great Britain is far from the sea. This little country has eastern, southern, and western coasts. It is washed by the Atlantic Ocean, the North Sea and the Irish Sea. England's fisheries are famous. West winds from the Atlantic Ocean bring rain and make English winters mild. They are the reason why the climate of the British Isles is normally mild.

Great Britain is a highly developed industrial country. The older fields of industry are shipbuilding, coal-mining, textiles and metallurgical industries, and the newer ones electronics and electrical engineering, chemical, aircraft, and automobile industries. All of them are very important for Great Britain are London, Birmingham, Glasgow, Liverpool, Manchester, Edinburgh, and Cardiff. Oxford and Cambridge are University cities.

Great Britain has 55 counties. Great Britain is a parliamentary monarchy. The Queen is formally the head of state. But in fact the country is ruled by a Cabinet headed by P.M. – responsible to Parliament which consists of two Houses: the House of Commons and the House of Lords. The Prime Minister is the head of the Government.

London is the capital of Great Britain, its political, economic, and commercial center. It is one of the largest cities in the world and the largest city in Europe. Its population is about 8 million.

London is divided into several parts: the City, Westminster, the West End, and the East End. The heart of London is the City, its financial and business center. Numerous banks, offices, and firms are situated there, including the Bank of England, the Stock Exchange, and the Old Bailey. Few people live here, but over a million people come to the City to work. There are some famous ancient buildings within the City. Perhaps the most striking of them is the St. Paul's Cathedral, the greatest of English churches. (It was used as a fortress, a royal palace, and a prison. Now it is a museum.)

Westminster is the governmental part of London. Nearly all English kings and queens have been crowned in Westminster Abbey. Many outstanding statesmen, scientists, writers, poets, and painters are buried here: Newton, Darwin, Chaucer, Dickens, Tennyson, Kipling, etc.

Across the road from Westminster Abbey is Westminster Palace, the seat of the British Parliament. The Clock Tower of the Houses of Parliament is famous for its big bell, known as "Big Ben". Buckingham Palace is the official residence of the Queen.

The West End is the richest and most beautiful part of London. It is the symbol of wealth and luxury. The best hotels, shops, restaurants, clubs, and theatres are situated there. The Trafalgar Square is the geographical center of London. It was named in memory of Admiral Nelson's victory in the battle of Trafalgar in 1805. The tall Nelson's Column stands in the middle of the square.

On the north side of the Trafalgar Square is the National Portrait Gallery. Not far away is the British Museum — the biggest museum in London.

BACK TO CONTENT

4. THE USA AND ITS CAPITAL

The United States is one of the largest countries in the world. The whole name of the United States is United States of America. For short, the country is often called the USA. There are fifty states and district of Columbia.

The United States of America lies in the central part of the North American continent between the two oceans: the Atlantic Ocean to the east and the Pacific Ocean to the west.

The USA consists of three separate parts. They are the Hawaiian Islands, situated in central part of the Pacific Ocean, Alaska separated by the Canadian territory and the rest major part of the USA.

The Great Rocky Mountains run north and south. There are two of the world's longest rivers in the USA. One is the famous Mississippi. The Missouri, one of the Mississippi's many long branches, is about that long too.

There are many big cities and towns in the USA. New York, San Francisco, Washington, Chicago, Los Angeles are the biggest of them.

The USA is a highly, developed industrialized country. It has very powerful industries, advanced technologies and science. Electronic and electric engineering, transport, communication and machine-tool industries can be found almost in all large cities of the USA. The USA is a federal republic.

The Government of the US is composed of three branches — executive, legislative and judicial. (The executive branch sees that laws are carried out. The legislative branch makes new laws. And the judicial branch makes sure that the laws and actions of the other branches agree with the Constitution.)

The beautiful city of Washington, District of Columbia is the capital of the United States and the center of its government. In white stone and marble buildings surrounded by green parks, thousands of people are working for national government.

The city was founded in 1790 and named after the first US president. It was built according to a preliminary plan. The city industry is not well developed because its main output are laws and government decisions. Washington is the residence of the President and the Congress of the United States, all government departments and other institutions.

Washington is a large scientific and cultural center where there are many research institutes, five universities, the National Academy of Science and the Library of Congress. There are also two very important buildings here — the Capitol (the seat of Congress) and the White House (the President's residence).

The third well-known building — Pentagon, the residence of the US Military department, is situated in the suburbs, to the south of the Potomac.

BACK TO CONTENT

5. SCIENTISTS OF UKRAINE

The Academy of Science of Ukraine includes many outstanding scientists and research workers famous for their important discoveries and inventions in nuclear physics, chemistry, biology, etc. They have made a great contribution to the world science for the benefit of our country. Among them are Sergiy Korolyov, Mykola Skliphosovsky, Volodymyr Vernadsky, Yevhen Paton and a lot of others whose names are familiar to us.

Serhiy Pavlovich Korolyov (1907-1966) is the famous scientist and designer of space-rocket systems. He was born in the city of Zhytomir in the family of a teacher. Many people regard him as a representative of the Russian people. However, S. Korolyov is Ukrainian.

He is known to be an outstanding creator of the practical space engineering. From 1927 he worked in the aircraft industry. In 1930, without giving up his job, he graduated from the Moscow Bauman Higher Technical School. After he had met Tsiolkovsky and studied his ideas, Korolyov became a rocket enthusiast. He was one of the founders of modern space-rocketry engineering. Korolyov trained many scientists and engineers who are now leading the work in research institutes and designing bureaus which specialize in the sphere of space- rocketry engineering.

In 1933 the first experimental rockets were made and tested. Korolyov took part in this work. Beginning with 1957 the first Earth sattelities in the world were put into orbit with the help of the systems he had designed. The spaceship in which man first flew into space, was made under his guidance.

The prominent surgeon and scientist **Mykola Skliphosovsky** (1836-1904) was born in Moldova and was brought up in a charity-school in Odesa. After successful graduating from the University he wrote his thesis and became a professor of the Medical Academy in Petersburg. He was one of the organizers of the surgical school in Russia.

M. Skliphosovsky liked Ukraine and often visited Odesa and other Ukrainian towns. In 1871 he bought an estate in the outskirt of Poltava and rested there in summer. Then he removed to Poltava and worked as a physician at the regional hospital. It should be noted that he took care about poor people. He treated them free of charge and tried to create favourable conditions in the hospital. A new school was built for poor children on his initiative and his daughter was a teacher there.

Volodymyr Vernadsky (1863-1945) was the first President of Ukrainian Academy of Sciences. He graduated from Saint Petersburgh State University.V. Vernadsky was a Ukrainian and Soviet mineralogist and geochemist who is considered one of the founders of geochemistry, biogeochemistry and of radiogeology. He was the first in our country to introduce the spectral method for the solution of geochemical problems.

Yevhen Paton (1870-1953) is another great scientist whose name is known all over the world. He was the first to apply electric welding in bridge construction. He carried out research on fundamentals of welding, how to calculate the strength of welded structures, and the mechanization of welding processes. During World War II Paton supervised the design and production of equipment and technology for automated welding of special steels for tanks, bombs and other military hardware. In 1934 Paton organized the Research Institute of Electro-welding at the Academy of Sciences.

So, as we see, Ukraine has a lot of outstanding people whose contribution to Ukrainian science was great and whose names will forever go down in history of the world civilization.

BACK TO CONTENT

6. CONSTITUTION OF UKRAINE

Governed by the Act of Ukraine's Independence of August 24, 1991, the Verkhovna Rada of Ukraine on behalf of the Ukrainian people adopted the Constitution – the Fundamental Law on June 28, 1996.

The Constitution establishes the country's political system, assures rights, freedoms and duties of citizens, and is the basis for its laws.

It asserts that Ukraine is a sovereign and independent, democratic, social, legal state. It is a Unitarian state with single citizenship.

Ukraine is republic. The people are the only source of power which is exercised directly and through the bodies of state power and local self-government.

The land, mineral raw materials, air space, water and other natural resources which are on the territory of Ukraine are objects of the property right of Ukrainian people.

The state language in Ukraine is Ukrainian.

The state symbols of Ukraine are the State Flag, the State Emblem and the State Anthem of Ukraine. The State Flag is a blue and yellow banner made from two equal horizontal stripes. The main element of the Great State Emblem of Ukraine is the Sign of the State of Prince Volodymyr the Great (the Small State Emblem of Ukraine). The State Anthem of Ukraine is the national anthem with the music of M. Verbytsky.

The capital of Ukraine is Kyiv.

The Constitution states that every person has the right to the free development of his/her personality, and has obligations before society where free and full development of the personality is assured. Citizens have equal Constitutional rights and freedoms and are equal before the law. There are no privileges or restrictions based upon face, color of skin, political and other beliefs, gender, ethnic and social origin, property, ownership, position, place of residence, language, religion..

The articles of the Constitution guarantee the rights to life, personal inviolability and the inviolability of dwelling, noninterference in private and family life, free choice of residence, work, rest, education, social security, housing, health protection, medical care and medical insurance, legal assistance, a safe and healthy environment.

Defense of the Motherland, of the independence and teritoral integrity, and respect for the state's symbols are the duty of citizens. Citizens of Ukraine perform military services in compliance with the law. No person may damage the environment, cultural heritage. Every person shall pay taxes and duties in the order and amount determined by law.

The Constitution outlines the structure of the national government and specifies its powers and duties. Under the Constitution the powers of the government are divided into the three branches – the legislative which consists of the Verkhovna Rada, the executive, headed by the President, and the judicial, which is led by the Supreme Court.

The parliament – the Verkhovna Rada is the only body of the legislative power in Ukraine. There are 450 people's deputies who are elected for a term of four years on the basis of universal, equal and direct suffrage by secret ballot.-

The Verkhovna Rada's main function is making laws. Law drafting work is performed by its Committees.

The Verkhovna Rada adopts the State Budget for the period from January 1 to December 31 and controls the execution of it. The monetary unit of Ukraine is the Hryvna.

The President of Ukraine is the head of the state and speaks on behalf of it. He is elected directly by the voters for a term of five years with no more than two full terms.

The highest body of the executive power is the Cabinet of Ministers. It is responsible to the President and is accountable to the Verkhovna Rada. It carries out domestic and foreign policy of the State, the fulfillment of the Constitution, as well as acts of the President, develops and fulfills national programs on the economic, scientific, technological, social and cultural development of Ukraine.

Justice in Ukraine is exercised entirely by courts. It is administered by the Constitutional Court and by courts of general jurisdiction. The Supreme Court of Ukraine is the highest juridical body of general jurisdiction.

The Constitution defines the territorial structure of Ukraine. It is composed of the Autonomous Republic of Crimea, 24 oblasts, rayons, cities, rayons in cities, settlements and villages. Cities of Kyiv and Sevastopol posses a special status determined by law.

The Constitution of Ukraine consists of 15 chapters, 161 articles.

The day of its adoption is a state holiday – the Day of the Constitution of Ukraine.

BACK TO CONTENT

7. SCIENCE IN GREAT BRITAIN

Science in Great Britain has a long history, producing many important figures and developments in the field. Major theorists from the UK include Isaac Newton whose laws of motion and illumination of gravity have been seen as a keystone of modern science and Charles Darwin whose theory of evolution by natural selection was fundamental to the development of modern biology. Major scientific discoveries include hydrogen by Henry Cavendish, penicillin by Alexander Fleming, and the structure of DNA, by Francis Crick and others. Major engineering projects and applications pursued by people from the UK include the steam locomotive developed by Richard Trevithick and Andrew Vivian, the jet engine by Frank Whittle and the World Wide Web by Tim Berners-Lee. Scientists from the UK continue to play a major role in the development of science and technology and major technological sectors include the aerospace, motor and pharmaceutical industries.

England and Scotland were leading centers of the Scientific Revolution from the 17th century and the United Kingdom led the Industrial Revolution from the 18th century, and has continued to produce scientists and engineers credited with important advances.

The UK plays a leading part in the aerospace industry, with companies including Rolls-Royce playing a leading role in the aero-engine market; BAE Systems acting as Britain's largest and the Pentagon's sixth largest defence supplier, and large companies including GKN acting as major suppliers to the Airbus project. Two British-based companies, GlaxoSmithKline and AstraZeneca, ranked in the top five pharmaceutical companies in the world by sales in 2009 and UK companies have discovered and developed more leading medicines than any other country apart from the US. The UK remains a leading center of automotive design and production, particularly of engines, and has around 2,600 component manufacturers.

Scientific research and development remains important in British universities, with many establishing science parks to facilitate production and co-operation with industry. Between 2004 and 2008 the UK produced 7% of the world's scientific research papers and had an 8% share of scientific citations, the third- and second-highest in the world (after the United States and China and the United States respectively). Scientific journals produced in the UK include Nature, the British Medical Journal and The Lancet.

BACK TO CONTENT

8. HIGHER EDUCATION IN GREAT BRITAIN

After finishing secondary school or college you can apply to a university, polytechnic, college of education or you can continue to study in a college of further education. The academic year in Britain's universities, Polytechnics, Colleges of education is divided into 3 terms, which usually run from the beginning of October to the middle of December, the middle of January to the end of March, from the middle of April to the end of June or the beginning of July.

There are 46 universities in Britain. The oldest and best-known universities are located in Oxford, Cambridge, London, Leeds, Manchester, Liverpool, Edinburgh, Southampton, Cardiff, Bristol and Birmingham. Good A-level results in at least 2 subjects are necessary to get a place at a university. However, good exam passes alone are not enough. Universities choose their students after interviews. For all British citizens a place at a university brings with it a grant from their local education authority.

English universities greatly differ from each other. They differ in date of foundation, size, history, tradition, general organization, methods of instruction and way of student life. After three years of study a university graduate will leave with the Degree of Bachelor of Arts, Science, Engineering, Medicine, etc. Some courses, such as languages and medicine, may be one or two years longer. The degrees are awarded at public degree ceremonies. Later he/she may continue to take Master's Degree and then a Doctor's Degree.

The 2 intellectual eyes of Britain – Oxford & Cambridge Universities – date from the 12 & 13 centuries. They are known for all over the world and are the oldest and most prestigious universities in Britain.

In the nineteenth and the early part of the twentieth centuries the so-called Redbrick universities were founded. These include London, Manchester, Leeds, Liverpool, Sheffield, and Birmingham. During the late sixties and early seventies some 20 'new' universities were set up. Sometimes they are called 'concrete and glass' universities. Among them are the universities of Sussex, York, East Anglia and some others.

During these years the government set up 30 Polytechnics. The Polytechnics, like the universities, offer first and higher degrees. Some of them offer full-time and sandwich courses (for working students). Colleges of Education provide two-year courses in teacher education or sometimes three years if the graduate specializes in some Particular subjects. Some of them who decide to leave school at the age of 16 may go to a further education college where they can follow a course in typing, engineering, town planning, cooking, or hairdressing, full-time or part-time. Further education colleges have strong ties with commerce and industry.

There's an interesting form of studies which is called the Open University. It's intended for people who study in their own free time and who 'attend' lectures by watching TV and listening to the radio. They keep in touch by phone and letter with their tutors and attend summer schools. The Open University students have no formal qualifications and would be unable to enter ordinary universities.

Some 80,000 overseas students study at British universities or further education colleges or train in nursing, law, banking or in industry.

BACK TO CONTENT

9. MY DEPARTMENT

- Department of Automation and Control in Technical Systems - ACTS,
- Department of Computer Engineering - CE,
- Department of Technical Cybernetics - TC,
- Department of Automatic Information Processing and Control Systems - AIPCS,

All the departments involved in FICS originate from the Faculty of Electrical Engineering (FEE) which was founded in 1918 and from which the Faculty of Automation and Electrical Instrument Engineering detached. In 1975 this faculty was divided into two: Faculty of Control Systems and Faculty of Electrical Instrument Engineering and Computer Science. Some of departments of these faculties were united into the faculty with today's name in 1985- " Informatics and Computer Science" (FICS).

The faculty trains specialists in development and maintenance of software programs and technical means of computer and computer-aided systems, practical implementation of modern information technologies of general and target purpose for different branches of science and industry. They are able to create and exploit computer and computer-aided systems of data processing and control for organizational, technical, organizational and technical objects.

Graduates work as directors and designers of program hardware complexes, projects managers, administrators of informational, computer and computer-aided systems and networks in public and private scientific, industrial, bank institutions and firms in Ukraine and abroad.

Acceptance of entry application forms takes place according to the directions of specialists training of the educational and qualification level "Bachelor" indicating desirable specialty of educational and qualification level "Master". Having got undergraduate higher education (Bachelor's program – 4 years), graduates enroll the study on competitive basis in the Master's degree programs (2 years of study) to get the full higher education. The best graduates may continue studying in postgraduate training program to get an academic degree.

Specialists training directions and specialties at FICS

- 6.050101 COMPUTER SCIENCE (f, p)
  - 7.05010101 information control systems and technologies (f, p)
  - 8.05010101 information control systems and technologies (f)
- 6.050102 COMPUTER ENGINEERING (f, p)
  - 7.05010201 flexible computer systems and robotics (f, p)
  - 8.05010201 flexible computer systems and robotics (f)
- 6.050103 SOFTWARE ENGINEERING (f, p)
- 6.050201 SYSTEM ENGINEERING (f,p)
  - 7.05020101 control and automation systems (f, p)
  - 8.05020101 control and automation systems (f)
  - 7.05020102 flexible computer systems and robotics (f, p)
  - 8.05020102 flexible computer systems and robotics (f)

From 2000 FICS is a part of the educational-scientific complex 'Informatics and Control Center' of NTUU 'KPI' which has been established to ensure high quality training, retraining and advanced training of specialists in the informatics and control field.

Generally, the faculty's scientific potential is concentrated in two research-and-development institutes: of 'System Technologies'" and of 'Information processes'. The scientists of these institutes conduct productive, fundamental and applied researches in the field of informatics.

Department of Computer Engineering was created in 1960. It is the first and leading department in Ukraine which prepares specialists (programmers, system programmers, system administrators, developers and users) in the sphere of computer software and hardware, parallel and distributed systems and networks.

BACK TO CONTENT

10. MY SPECIALITY

One of the leading departments of Ukraine, whose alumni activities are related to computerization, is the Department of Computer Engineering of Faculty of Informatics and Computing Technique of National Technical University of Ukraine "Kiev Polytechnic Institute". The peculiarity of the training of our graduates is a profound study of the most modern high-tech fields of science and technology: Information Technology; computer, microprocessor-based electronics; systems and networks of data transfer and telecommunications; computerized control systems.

Our students receive a fundamental knowledge of: programming (algorithmic languages and programming; object-oriented programming; modern programming techniques; systems programming; databases; operating systems; WEB-technologies, etc.); mathematics (higher mathematics, discrete mathematics, probability theory and mathematical statistics, algorithmics, etc.); telecommunications theory and means (information theory and coding, digital signal processing, basic theory of information processes, information security, etc.); computer and microprocessor technique (computer electronics, microprocessor-based devices, the architecture of computer systems and networks, etc.); Theory and Control Systems (the theory of automatic control, digital control systems, etc.); design (design and modeling of computer networks and computerized control systems, etc.). All this is possible within the specialty "Computer Engineering". "Computer Engineering" and "Software Engineering" specializations are available as part of this specialization.

Department of Computer Engineering trains: Bachelors in "Computer and Software Engineering"; experts and masters of programming, which are assigned, respectively, qualified engineer and master's degree in computer engineering. The activities of specialists are focused on research, development and implementation of: computerized control systems; microprocessor-based systems and automation; telecommunication systems and networks in management; local computerized systems and networks.

Activities of graduates in the field of informatics: organizational, management, research, technology, design and engineering. Places of employment of graduates: research, analysis, design, research, industrial organizations and institutions of state and private forms of ownership: industry, energy sector, science and education, transport and communications, service, health care, credit and financial services, government. Graduates work as specialists in computerized control systems, data processing and programming, data protection, development and use of microcontrollers for various purposes, as administrators of computer networks, project managers, engineers, field engineers, computer and automated equipment, as well as engineers-researchers.

The department is equipped with modern appliances. Each student has an opportunity to work at a certain time in the labs (data transmission and telecommunications, computerized control systems and automation, electronics and microprocessor technology).

BACK TO CONTENT

THEORY

1. ACTIVE AND PASSIVE VOICE

Formation of the Tenses in the Active Voice

Aspect/ Time	Present	Past	Future	Future-in-the -past
Simple	**I** + (s) **work(s)** do, does	**II** or –ed **took, worked** did	will + **I / will work**	would + **I / would work**
Continuous	be (pr.) + **I** + ing (am, is, are) **am, is, are working**	be (past) + **I** + ing (was, were) **was, were working**	will + be + **I** + ing **will be working**	would + be + **I** + ing **would be working**
Perfect	have, has + **III** **have, has worked**	had + **III** **had worked**	will + have + **III** **will have worked**	would + have + **III** **would have worked**
Perfect Continuous	have, has + been + **I** + ing **have, has been working**	had + been + **I** + ing **had been working**	will + have +been + **I** +ing **will have been working**	would + have + been + **I** + ing **would have been working**

Formation of the Tenses in the Passive Voice (be + III)

Aspect / Time	Present	Past	Future	Future-in- the- Past
Simple	am, is, are + **III** **am, is, are made**	was, were + **III** **was, were made**	will be + **III** **will be made**	would be + **III** **would be made**
Continuous	am, is, are being + **III** **am, is, are being made**	was, were being + **III** **was, were being made**	----------	----------
Perfect	have, has been + **III** **have, has been made**	had been + **III** **had been made**	will have been + **III** **will have been made**	would have been + **III** **would have been made**
Perfect Continuous	----------	----------	----------	----------

Gerund	being + V_3
Perfect Participle	having been + V_3

BACK TO CONTENT

2. MUCH, MANY, A LOT OF, LITTLE, FEW

Much используется с неисчисляемыми существительными, обычно в отрицательных предложениях и вопросах.
I have not **much** money.
(У меня нет больших денег.)

Кроме того, слово **much** имеет значения «очень», «гораздо», «значительно», «намного».
He did it **much** sooner than she had expected.
(Он сделал это гораздо скорее, чем она ожидала. If you know what I mean, lol)

Many также означает «много», но используется с исчисляемыми существительными, часто в отрицательных предложениях и вопросах (но не только), а также во фразах со словами «многие из».
Have you been to **many** countries?
(Вы были во многих странах?)

Many используется, например, когда мы говорим «много дней», «много лет», «много часов», «много раз».
We have known each other **many** years.
(Мы знаем друг друга много лет.)

В утвердительных предложениях чаще употребляются **a lot of**, **lots of** как с исчисляемыми существительными, так и с неисчисляемыми. Переводятся как «уйма», «куча», «масса».
Here is **lots of** blood, let us stop and remove it.
(Здесь много крови, давайте остановимся и уберём её. #шутка #юмор)

Наречия **few** и **little** (не путать с прилагательным «маленький») означают «мало», причём little используется с неисчисляемыми существительными, a few — с исчисляемыми.
Hurry up! There’s **little** time!
(Торопись! У нас мало времени!)

Когда наречия little и few используются с артиклями, их значения становятся иными – «немного», «небольшое количество», «несколько».
They were around my age, or maybe just **a little** older.
(Они были примерно моего возраста, может быть, чуть старше.)

BACK TO CONTENT

3. CONDITIONAL SENTENCES

	If-clause *(condition)*	**Main clause** *(result)*
Zero *Conditional* - used for **present, real**/factual situations	If I **drink** coffee at night,	I **don't sleep** well.
First Conditional - used **for future real**/factual situations	If I **drink** coffee tonight,	I **won't sleep** well.
Second Conditional - used for present or **future unreal**, imaginary situations	If I **drank** coffee tonight,	I **wouldn't sleep** well.
Third Conditional - used for **past unreal**, imaginary situations	If I **had drunk** coffee last night,	I **wouldn't have slept** well.

4. MODAL VERBS

Modal	Function	Form in the Present	Form in the Past
Can	To show ability	I can run 10 miles.	I could run 10 miles when I was young.
	To suggest a possibility or give an option	Students can pre-enroll in classes.	
	To ask for or to give permission	Can you call me? You can leave now.	
	To show impossibility	It cannot be Jim standing there. He went away for the weekend.	
Could	To show past ability		I could run 10 miles when I was young.
	To ask a polite question	Could I call you?	
	To show possibility	Why isn't Mary here? She could be busy.	Why wasn't Mary at the party last night? She could have been busy.
	To show impossibility	He could not be here at the party. He is out of town.	He could not have been at the party last night. He was out of town.
	To suggest a possibility/opportunity or give an option	You could try going this way.	You could have tried going that way.
May	To ask for or to give permission (formal)	May I call you?	
	To show possibility	The instructor may come to class late today.	The instructor may have come to class late yesterday.
Might	To show possibility	The instructor might come to class late today.	The instructor might have come to class late yesterday.
Should	To show advisability	You should try the new restaurant downtown.	You should have tried the new restaurant downtown.
	To show obligation	I should renew my driver's license.	I should have renewed my driver's license.
	To show expectation	You should receive my letter in two days.	You should have received my letter in two days.

BACK TO CONTENT

5. DEGREES OF COMPARISON OF ADJECTIVES

Positive	Comparative	Superlative
Big	Bigger	Biggest
Tall	Taller	Tallest
Easy	Easier	Easiest
Long	Longer	Longest
Some adjectives have irregular forms of comparatives and superlatives		
Bad	Worse	Worst
Good	Better	Best
Careful	More careful	Most careful
Important	More important	Most important

6. REPORTED SPEECH

Direct Speech	Reported Speech
Simple present	Simple past
Present continuous	Past continuous
Past simple	Past perfect simple
Present perfect simple	
Past perfect simple	
Past continuous	Past perfect continuous
Present perfect continuous	
Past perfect continuous	
Future (going to)	Was / Were going to
Future (will)	Conditional (would)
Conditional	

DIRECT SPEECH		REPORTED SPEECH
Present simple He said, "I want to watch a film"	⇨	Past Simple He said (that) he wanted to watch a film
Present Continuous He said, " Jane is sleeping."	⇨	Past Continuous He said (that) Jane was sleeping.
Present Perfect She said,"I have bought a new dress."	⇨	Past Perfect She said (that) she had bought a new dress.
Past Simple Alex said, " I finished my homework."	⇨	Past Perfect Alex said (that) he had finished his homework.
Will She said, "I will always love Tom."	⇨	Would She said (that) she would always love Tom.
Can Tom said, "I can carry 50 kg."	⇨	Could Tom said (that) he could carry 50 kg.
May Ben said " It may rain."	⇨	Might Ben said (that) it might rain.
Must He said, " Everybody must obey the rules."	⇨	Had to He said (that) everybody had to obey the rules.
Have to She said, " I have to go home."	⇨	Had to She said (that)she had to go home.

BACK TO CONTENT