

The syllabus of the discipline
Programming

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Field name	Detailed content, comments
Name of the faculty	Faculty of Infocommunications
Level of higher education	First (bachelor's)
Code and name of the specialty	172 Telecommunications and radio engineering
Type and name of educational program	EPP "Information and Network Engineering"
Name of the discipline	Programming
Number of ECTS credits	3
Discipline structure (distribution by types and hours of study)	20 hours - 10 lectures, 6 hours - 3 practical classes, 16 hours - 4 laboratory classes, 6 hours - 3 consultations, 42 hours - homework, type of control: credit
Schedule (terms) of studying the discipline	2nd year, III semester
Prerequisites for studying the discipline	The basis for the successful assimilation of the course is the knowledge gained by students in the study of the courses "Higher Mathematics"
Competences, knowledge, skills, understanding, which is acquired by the applicant in higher education in the learning process	The discipline is used for formation the following competencies: Develop algorithms for specific tasks; Develop programs according to a given algorithm; Have an application development environment - Visual Studio
The quality of the educational process	Educational-methodical and material-technical resource provision of the educational program, within the framework of which the discipline is studied, meets the licensing requirements and accreditation conditions of the educational activity of the university. Annual monitoring and revision of the curriculum of the discipline in accordance with the requirements and recommendations of the Ministry of Education and Science, state certification of acquired competencies of graduates, standards of cooperation with employers to ensure a competitive level of training. Adherence to the principles of academic integrity (https://lib.nure.ua/plagiat). Contains public information on the requirements, competencies, level of education within the current educational program.

Description and content of the discipline

The purpose of studying the discipline - A feature of the course is that the C ++ programming language is considered as algorithmic, not as object-oriented. This course is a necessary basis for further study of the C ++ language.

Content

Content module 1. Introduction and algorithmization.

Topic 1. Introduction to programming and problem solving.

Topic 2. Algorithmization

Content module 2. Basics of C ++

Topic 1. Syntax, semantics and program development in C ++

Topic 2. Basic operations

Content module 3. Control structures

Topic 1 Conditional operators

Topic 2. Cycles. Arrays

Topic 3. N dimensional arrays

Content module 4.

Topic 1. Terms. Functions.

Topic 2. Indexes

Topic 3. Bitwise operators. Working with files

Topic 4. Dynamic memory

Topic 5. Data structures

Learning outcomes of higher education

As a result of studying the discipline, students must:
know:

- Stages of problem solving;
- What is a programming language;
- The concept of algorithm, types of algorithms;
- C ++ program elements;
- Syntax, semantics, and data types;
- Basic C ++ language operations;
- Management structures;
- What are arrays, structures, pointers and functions.

be able:

- Develop algorithms for specific tasks;
- Develop programs according to a given algorithm;
- Have an application development environment - Visual Studio.

Assessment system according to each task for passing the test / exam

To assess the work of a student during the semester, the final rating score Q_{sem} is calculated as the sum of marks for different types of classes and control activities.

Type of lesson / control measure	Rating
Lb № 1, 2	$(12...20) \times 2 = 18...40$
Checkpoint 1	24...40
Lb № 3, 4	$(12...20) \times 2 = 24...40$
Control testing 1	12...20
Checkpoint 2	36...60
Всего за 2-й семестр	60...100

Qualitative evaluation criteria in the national scale and ECTS

Satisfactory, D, E (60-74). Show the required minimum of theoretical knowledge. Know the ways and methods of solving practical problems and be able to use them in practice.

Well, C (75-89). Firmly know a minimum of theoretical knowledge. Demonstrate the ability to solve a practical problem and justify all stages of the proposed solution.

Excellent, A, B (90-100). Show complete knowledge of basic and additional theoretical material. Unmistakably solve a practical problem, explain and justify the chosen method of solution.

Assessment scale: national and ECTS

The sum of points for all types of educational activities	ECTS assessment	Score on a national scale	
		for exam, course project (work), practice	for offset
90 – 100	A	perfectly	credited
82-89	B	fine	
74-81	C	satisfactorily	
64-73	D		
60-63	E		
35-59	FX	unsatisfactory with the possibility of reassembly	not credited with the possibility of re-assembly
0-34	F	unsatisfactory with mandatory re-examination	not credited with compulsory re-study of the discipline

Methodical support

Basic literature

- 1 Belotserkovskaia Y.E. Halyna N.V. Kataeva L.Iu. Alhorytmyzatsyia. Vvedenye v yazyk prohrammyrovanyia S++2-e yzdanye, yspravlennoe "YNTUYT" 2016
- 2 Kleinberh Dzh., Tardos E. Alhorytmy: razrabotka y pryomenenye. Klassyka Computers Science / Per. s anhl. E. Matveeva. — SPb.: Pyter, 2016. — 800 s.: yl. — (Seryia «Klassyka computer science»).
- 3 Shyldt, Herbert. C++: bazovyi kurs, 3-e yzdanye. : Per. s anhl. — M. : Yzdatelskyi dom "Vyliame", 2010. — 624 s.: yl. — Paral. tyt. anhl.
- 4 Deil N., Uymz Ch., Khedynhton M. Prohrammyrovanye na C++: Per. s anhl. - M.: DMK, 2000. - 672 s.: yl., (Seryia «Uchebnyk»).
- 5 Shyldt H. Samouchytel C++: Per. s anhl. — 3-e yzd. — SPb.: BKhV- Peterburh, 2003.
— 688 s.

Supporting literature

- 6 Douson M. Yzuchaem S++ cherez prohrammyrovanye yhr. - SPb.: Pyter, 2016. – 352 s.:
- 7 Əllain.S++. Ot lamera do prohrammera. - SPb.: Pyter, 2015. — 480s: yl.
- 8 Muntian Aleksandr Yurevych « Osnovy prohrammyrovanyia na C+ + , Chast I».Uchebnoe posobyie po kursu. © «Fyztekshkola» 2005h.

Methodical instructions for different types of classes

1. Konspekt lektsii z kursu «Prohramuvannia-1» dlia studentiv usikh form navchannia napriamu 6.050903 – Telekomunikatsii ” –Kh.: KhNURE, 2016 Elektronnyi variant.
2. Metodychni vkazivky do samostiinoi roboty ta praktychnykh zaniat z dystsypliny «Prohramuvannia-1» dlia studentiv usikh form navchannia napriamu 6.050903 – Telekomunikatsii Kh.: KhNURE, 2016 Elektronnyi variant.
3. Metodychni vkazivky do laboratornykh robit z dystsypliny «Bazy danykh» dlia studentiv usikh form navchannia napriamu 6.050903 – Telekomunikatsii Kh.: KhNURE, 2016 Elektronnyi variant

Information support

1. Visual Studio 2017 program package