

The syllabus of the discipline

Planning and design of information networks

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Field name	Detailed content, comments
Name of the faculty	Faculty of Infocommunications
Level of higher education	Second (master's)
Code and name of the specialty	172 Telecommunications and radio engineering
Type and name of educational program	ESP, EPP "Information and Network Engineering"
Name of the discipline	Planning and design of information networks
Number of ECTS credits	5
Discipline structure (distribution by types and hours of study)	26 hours - 13 lectures, 8 hours - 4 laboratory classes, 16 hours - 4 consultations, 90 hours - independent work, type of control: comb. exam
Schedule (terms) of studying the discipline	1st year, I semester
Prerequisites for studying the discipline	Basic concepts of the principles of organization telecommunications networks obtained at the bachelor's level.
Competences, knowledge, skills, understanding, which is acquired by the applicant in higher education in the learning process	Have knowledge and skills in designing and reconstructing information networks.
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 the discipline is to prepare students to perform the functions of designing information networks of various scales and purposes, taking into account the competitive conditions of modern global information infrastructure.

Content

Content module 1.

- Topic 1. Introduction. General principles of network design.
- Topic 2. Stages of design. Composition of project documentation.
- Topic 3. General traffic analysis.
- Topic 4. Preparation of fiber-optic construction projects.
- Topic 5. Planning and design of SDH networks.
- Topic 6. Planning and design of IP / MPLS networks.
- Topic 7. Features of the design of radio relay communication lines.

Content module 2.

- Topic 8. Designing TMZK.
- Topic 9. Design of xDSL access networks
- Topic 10. Features of corporate network design.
- Topic 11. Features of designing cellular networks.
- Topic 12. Planning and design of radio access networks

Learning outcomes of higher education

As a result of studying the discipline, students must:

know: methods of designing transport networks and access networks with integrated application of various modern network technologies, the composition of project documentation.

be able to: predict the processes of development of information networks, draft projects for the construction of new and reconstruction of existing networks.

to possess (list of formed competencies): knowledge on skills of designing and reconstruction of information networks.

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

When evaluating a student's work during the semester, the final rating O_{sem} is calculated as the sum of grades for different types of classes and tests. The form of final control for the discipline is an exam. A student is admitted to the exam if during the semester the student received at least 60 points in the 100-point system for all control activities.

Type of lesson / control measure	Rating
Lb № 1	10
Pr № 1	5
Lb № 2	10
Pr № 2	5
Abstract	20
Checkpoint 1	50
Lb № 3	10
Pr № 3	5
Lb № 4	10
Pr № 4	5
Abstract	20
Checkpoint 2	50
Total for the semester	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.

Good, 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		
64-73	D	satisfactorily	
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

1. Konspekt leksii z dystsypliny «Planuvannia ta proektuvannia informatsiinykh merezh». Uporiadnyk Kostromytskyi A.I. (v elektronnomu vyhliadi)
2. Kompleks navchalno-metodychnoho zabezpechennia navchalnoi dystsypliny «Planuvannia ta proektuvannia informatsiinykh merezh», dlia studentiv usikh form navchannia pidhotovky mahistriv spetsialnosti 172 «Telekomunikatsii ta radiotekhnika» OPP/ONP «Informatsiino-merezhna inzheneriia» ta «Merezhi mobilnoho zviazku» [Elektronnyi dokument] / Uporiad.: A.I. Kostromytskyi. - Kharkiv: KhNURE, 2019. – 377 s.

Links to electronic sources

1. <http://dl.nure.ua/> (dostup z akkauntiv nure.ua dlia studentiv, shcho vyvchait dystsyplinu)
2. <http://lib.nure.ua/enmk>.