The syllabus of the discipline

# *Global information infrastructure*

***S.A. Krivenko,***
***Associate Professor of INE, Ph.D., Associate Professor***
***E-mail: stanislav.kryvenko@nure.ua***

| **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 | EPP "Information and Network Engineering" |
| Name of the discipline | Global information infrastructure |
| Number of ECTS credits | 4 |
| Discipline structure (distribution by types and hours of study) | 30 hours - 15 lectures,<br>4 hours - 2 practical lesson,<br>16 hours - 4 laboratory classes,<br>12 hours - 6 consultations,<br>88 hours - independent work,<br>**type of control**: credit |
| Schedule (terms) of studying the discipline | 1-st year, I semester |
| Prerequisites for studying the discipline | Basic concepts of:<br>discipline "Python programming language" |
| Competences, knowledge, skills, understanding, which is acquired by the applicant in higher education in the learning process | The discipline is used to form the following competencies: to analyze the principles of building a global information infrastructure for communications; navigate the algorithms, programs and schemes of the global information infrastructure of communication; enter the text of programs of separate modules and perform modeling; formulate and solve the main tasks of operation and reprogramming of the global communication information infrastructure |
| 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

According to the qualification requirements for higher education in specialty 172 "Telecommunications and Radio Engineering" the purpose of the discipline is to form a system of concepts, a set of knowledge and skills on technologies for building and operating Global and National Information Infrastructure, solving major problems of information infrastructure: technical , economic, organizational.

## Content

**Content module 1. Functional construction and interfaces**.

Topic 1. General characteristics.

Topic 2. Basic technologies.

Topic 3. Functional diagram.

Topic 4. Functional model.

Topic 5. Linear prediction model

**Content module 2. Characteristics of GII.**

Topic 6. Infrastructure of 3GPP standards

Topic 7. Verilog model.

Topic 8. Characteristics of technology

Topic 9. Fundamental types of channels

Topic 10. Database infrastructure.

**Content module 3. Protocols.**

Topic 11. Design model.

Topic 12. Point-to-point protocol (PPP).

Topic 13. Channel switching protocols.

Topic 14. Packet switching protocols.

Topic 15. Directions of development (Microsoft Azure, WEB, CLOUD).

## Learning outcomes of higher education

As a result of studying the discipline, students must:

**know:** general trends and problems of global information infrastructure development; principles and systems of building a modern global information infrastructure; description languages, basics of organization and composition of global information infrastructure software.

**be able to:** analyze the principles of building a global information infrastructure of communication; navigate the algorithms, programs and schemes of the global information infrastructure of communication; enter the text of programs of separate

modules and perform modeling; formulate and solve the main tasks of operation and reprogramming of the global communication information infrastructure.

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

To evaluate the student's work during the semester, the final rating is calculated as the sum of grades for different types of classes and for control activities. Each laboratory work is evaluated in 10 points (4 points for attendance, 2 points for performance, 2 points for report, 2 points for defense). Each test task has 10 points. The credit rating is defined as the ratio of the obtained points to the highest value, which is given in the table. The maximum rating during the semester - 100 points, is defined as the average for three credits.

| **Type of lesson / control measure** | **MAX rating** | **rating** |
|---|---|---|
| Lectures 1,2,3,4,5 | 10 | 20 |
| Practical classes 1.2 | 20 | 40 |
| Test tasks for topic 1 | 20 | 40 |
| **Checkpoint 1** | 50 | 100 |
| Lectures 6,7,8,9,10 | 10 | 20 |
| Laboratory work 2.3 | 20 | 40 |
| Test tasks for topic 2 | 20 | 40 |
| **Checkpoint 2** | 50 | 100 |
| Lectures 11,12,13,14,15 | 10 | 20 |
| Laboratory work 3.4 | 20 | 40 |
| Test tasks for topic 3 | 20 | 40 |
| **Checkpoint 3** | 50 | 100 |
| **Rating** | 150 | 300 |

**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

### Basic literature

1. Bezruk, V.M. Informatsiini merezhi zviazku. Ch.3. Merezhi mobilnoho zviazku[Tekst]: navch. posibnyk./ V.M. Bezruk, V.V. Yemelianov, S.A. Kryvenko – Kharkiv: KhNURE, 2011. – 420s.

### Supporting literature

2. Skliar, B. Tsyfrovaia sviaz. Teoretycheskye osnovы y praktycheskoe prymenenye. Yzd.2-e, yspr.: Per s anhl. – M.: Yzdatelskyi dom «Vyliams», 2007. – 1104s.

### Methodical instructions and literature for different types of classes

3. Metodychni vkazivky do samostiinoi roboty ta praktychnykh zaniat z dystsypliny «Hlobalna informatsiina infrastruktura» dlia studentiv dlia studentiv usikh form navchannia spetsialnosti 172 «Telekomunikatsii ta radiotekhnika» [Elektronnyi resurs] / KhNURE ; uporiad. S. A. Kryvenko. – Kharkiv, 2016. – 16 s.
4. Konspekt lektsii z dystsypliny "Hlobalna informatsiina infrastruktura" dlia studentiv usikh form navchannia spetsialnosti 7.05090301 "Informatsiini merezhi zviazku" [Elektronnyi resurs] / KhNURE ; uporiad. S. A. Kryvenko. – Kh., 2014. – 45 s.
5. Metodychni vkazivky do laboratornykh robit z dystsypliny "Hlobalna informatsiina infrastruktura" dlia studentiv usikh form navchannia spetsialnosti 7.05090301 "Informatsiini merezhi zviazku" [Elektronnyi resurs] / KhNURE; uporiad. S. A. Kryvenko. – Kh., 2014. – 44 s.

### Information support

1. MS Visual Studio 2019 computer-aided design package, EDSW and FAR programs.

Bazova literatura

Dopomizhna literatura

2. Skliar, B. Tsyfrovaia sviaz. Teoretycheskye osnovы y praktycheskoe prymenenye. Yzd.2-e, yspr.: Per s anhl. – M.: Yzdatelskyi dom «Vyliams», 2007. – 1104s.: yl. – Paral. Tyt. Anhl..

Metodychni vkazivky z samostiinoi roboty