

The syllabus of the discipline

***Database***

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<b>Field name</b>	<b>Detailed content, comments</b>
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	Database
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, <b>type of control:</b> 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 training discipline is used to form the following competencies: to design a database schema for a given subject area; design interface user; use a DBMS to work with a database and development of application applications for the database.
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 ( <a href="https://lib.nure.ua/plagiat">https://lib.nure.ua/plagiat</a> ). 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 teach students how to build, methods and tools for designing, creating and working with a database and developing applications for relational databases.

### **Content**

#### **Content module 1. Database models.**

Topic 1. Introduction .

Topic 2. Concepts of database development

Topic 3. The essence-connection model

Topic 4. The transition from ER - model charts to relationships

Topic 5. Normalization.

#### **Content module 2. Relational algebra**

Topic 1. Basic operations of relational algebra.

#### **Content module 3. DBMS and networks**

Topic 1. Database management systems

Topic 2. Architecture of multiuser DBMS

Topic 3. DBMS MySQL Server 5

### **Learning outcomes of higher education**

Based on the results of studying the discipline, students should:

**KNOW:**

- the concept and technology of databases;
- logical level of data description, keys, links, schema, subcircuit;
- database architecture;
- data models and database types;
- relational databases (RDB), RDB languages, elements of relational algebra;
- DBMS; functions and characteristics of the DBMS;

**BE ABLE TO:**

- for a given subject area, design a database schema;
- design user interface;
- use a DBMS to work with the database and develop applications for the database.

### 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  $Q_{\text{sem}}$  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	<b>24...40</b>
Lb № 3, 4	$(12...20) \times 2 = 24...40$
Control testing 1	12...20
Checkpoint 2	<b>36...60</b>
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	<b>A</b>	perfectly	credited
82-89	<b>B</b>	fine	
74-81	<b>C</b>		
64-73	<b>D</b>	satisfactorily	
60-63	<b>E</b>		
35-59	<b>FX</b>	unsatisfactory with the possibility of reassembly	not credited with the possibility of re-assembly
0-34	<b>F</b>	unsatisfactory with mandatory re-examination	not credited with compulsory re-study of the discipline

## Methodical support

### Basic literature

1. Konnoly, T., Behh, K. Bazy danykh: proektyrovanye, realizatsyia y soprovozhdenye. Teoryia y praktyka: per s anhl., 2-e yzd. - M. : «Vyliams», 2000. - 1120 s.
2. Meier, D. Teoryia reliatsyonnykh baz danykh: per. s anhl. – M. : Myr, 1987. – 608 s.
3. Martyn, Dzh. Orhanyzatsyia baz danykh v vychyslytelnykh systemakh: Per. S anhl.- M. : Myr, 1980.- 662 s.
4. Ulman, Dzh. Osnovy systemy baz danykh: per. s anhl. - M. : Fynansy y statystyka, 1983.- 335 s.
5. Deit, K. Vvedenye v systemy baz danykh: per. s anhl - M. : Yzdatelskyi dom «Vyliams», 2001. - 1072 s.
6. Tyory, T. Proektyrovanye struktur baz danykh: v 2-kh kn. / T. Tyory, Dzh. Frai. - M. : Myr, 1985. - Kn. 1 - 287 s. : Kn. 2 - 320 s.
7. Rob, P. Systemy baz danykh: proektyrovanye, realizatsyia upravlenye: per. s anhl. / P. Rob, K. Koronel. – SPb. : Yzd-vo BKhV, 2004. – 1040 s.
9. Kharrynhton, Dzh. L. Proektyrovanye reliatsyonnykh BD: per. s anhl. - M. : «Lory», 2000.- 230 s.
10. Styvens, R. Prohrammyrovanye baz danykh: per. s anhl. – M. : Bynom-Press, 2003. -384 s.

### Supporting literature

12. Baiens, Dzh. Razrabotka baz danykh dlia Web: per. s anhl. M. : Эkom, 2001. 624 s.
13. Havrylova, T. A. Bazy znanyi intelektualnykh system / T. A. Havrylova, V. F. Khoroshevskiy - SPb. : Pyter, 2000. - 384 s.
14. Saimon, A. R. Stratehicheskye tekhnolohyy baz danykh: per. s anhl. / Pod red. y s predysl. M. R. Kohalovskoho. M. : Fynansy y statystyka, 1999. 479 s.

### Methodical instructions for different types of classes

1. Konspekt leksii z kursu «Bazy danykh» dlia studentiv usikh form navchannia napriamu 6.050903 – Telekomunikatsii ” –Kh.: KhNURE, 2012 Elektronnyi variant.
2. Metodychni vkazivky do samostiinoi roboty ta praktychnykh zaniat z dystsypliny «Bazy danykh» dlia studentiv usikh form navchannia napriamu 6.050903 – Telekomunikatsii Kh.: KhNURE, 2012 Elektronnyi variant.
3. Metodychni vkazivky do samostiinoi roboty ta praktychnykh zaniat z dystsypliny «Bazy danykh» dlia studentiv usikh form navchannia napriamu 6.050903 – Telekomunikatsii Kh.: KhNURE, 2012 Elektronnyi variant.
4. Metodychni vkazivky do laboratornykh robit z dystsypliny «Bazy danykh» dlia studentiv usikh form navchannia napriamu 6.050903 – Telekomunikatsii Kh.: KhNURE, 2012

### Information support

MySQL DBMS package