Національний технічний університет України
«КИЇВСЬКИЙ ПОЛІТЕХНІЧНИЙ ІНСТИТУТ
імені ІГОРЯ СІКОРСЬКОГО»

Department of
Geoengineering

Designing the connection of ground and underground objects

Work program of the discipline (Syllabus)

Details of the Disciplines	
Level of higher education	***Second (Educational and scientific)***
Branch of knowledge	*18. Production and technology*
Specialty	*184 Mining*
Educational program	*Geoengineering*
Discipline status	*Selective*
Form of study	*distance learning /mixed form*
Year of study, semester	*1-st semester*
Discipline scope	*3 credits/90 h (lections -6. Practice– 6,.)*
Semester control / control measures	*Eкsamination*
Lessons schedule	*According to the training schedule (two weeks)*
Language of Lecture	*/Englich/*
Information about course leader / lehrer	*Supervisor of the graduate student Besarabets L.I.*
Course placement	Link to remote resource (Google classroom)

Program of the discspline

1. Description of the discipline, its purpose, subject of study and learning outcomes

The program of the discipline The Designing the connection of ground and underground objects is compiled in accordance with the educational program of the second (master's) level of higher education of the degree of master of specialty 184

Academic discipline refers to the cycle of professional and practical training.

The problem of using the underground space of cities is most relevant in their central, most visited areas, where capital support and historically valuable buildings predominate, as well as in various specialized centers and in public transport complexes. In this case, underground structures can be located almost everywhere, including under buildings, streets and squares, as well as under water.

Many objects of engineering-transport, social and industrial infrastructure are located safely and interconnected underground, integration of underground and above-ground constructions is provided. All this allows to use the territorial resource efficiently, to significantly save the area

of scarce urban lands, to promote the protection of especially valuable lands and objects, to reduce gas pollution and noise in the territories.

The purpose of studying the discipline in accordance with the requirements of the subject is research of possibilities and directions of use of underground space of megacities in the system of regional development of land relations.

The objectives of the discipline are

1. - to choose planning schemes of interconnected objects of engineering-transport social and industrial infrastructure, integration of underground and above-ground constructions;

- to determine the efficiency of the use of underground space;

skill:

Apply the acquired theoretical knowledge during the substantiation and design of underground structures and their connection with the objects of ground infrastructure in the conditions of dense urban development and in difficult mining and geological conditions

2. Prerequisites and postrequisites of the discipline (place in the structural and logical scheme of training in the corresponding educational program)

Knowledge of the basics of construction and construction of urban underground structures and ground facilities, technology of construction of mine workings, mechanization and organization of underground construction.

3. The content of the academic discipline

Topic 1. General information about surface and underground structures
The main trends of construction in big cities. Classification of underground structures. Underground structures and the environment. Classification of connections between surface and underground structures (2 hours).
Topic 2. Design of connections between surface and underground structures. Materials for connections between ground and underground structures. Design of stairs. Design of ramps. Basic information about elevators, escalators and conveyors. Waterproofing. (4 hours)

4, Training Materials and Resources

Main literature

1. Cymbal S.Y. Underground construction: Study guide. - K.: KNUBA, 2004.-148 p. ISBN 966-627-089-7
2. Samedov A.M. Construction of urban underground structures: Education. manual / A.M. Samedov, V.G. Tailor. - K.: NTUU "KPI", 2011. - 400 p.

Supporting literature

1. Snisarenko V.I. Scientific bases and methods of improving construction technologies of structures and structures buried in the ground: 05.23.02/Kyivsk. state technical University of Architecture and Architecture. - K.: 1994. - 49 p.
2. Filakhtov A.L., Lubenets G.K., Pysanenko N.V. etc. The construction experience was built using the "wall in the ground" method. - K.: Budivelnyk, 1981. - 236 p..
3. Vasiliev S.G. Underground construction of a shallow foundation. - Lviv: Higher sh. Publishing house at Lviv University, 1980. - 144 p.
4. STATE BUILDING STANDARDS OF UKRAINE Transport structures Parking lots and garages for passenger cars DBN V.2.3-15:2007
5. STATE BUILDING STANDARDS OF UKRAINE Transportation structures METROPOLITAN DBN V.2.3-7-2010

6. O.I. Telichenko, M.V. Nagornyi. Construction and installation of buildings and structures. Study guide for the development of course and diploma projects of students of specialty 192 "Industrial and civil engineering". (PCB) – Amounts: - 197 p.

5. Methodology for mastering an academic discipline (educational component)

Topic 1. General information about surface and underground structures

The main trends of construction in big cities. Classification of underground structures. Underground structures and the environment. Classification of connections between ground and underground structures.

Topic 2. Design of connections between ground and underground structures. Materials for connections between ground and underground structures. Design of stairs. Design of ramps. Basic information about elevators, escalators and conveyors. Waterproofing.

6. Recommended topics of practical classes

The purpose of the practical classes is to consolidate the knowledge gained by students in the study of the discipline, to acquire the skills and abilities for the practical application of the acquired knowledge in the framework of the main issues of design of connections between ground and underground structures, the assimilation of standards for the arrangement of the main and auxiliary components of the connections, the use in the applied aspect of information about the mechanism and features the functioning of the rolling stock and the maintenance of the life of the service units of the underground complex.

Practical lesson-1. Design of stairs. (2 years).

Practical lesson -2. Design of ramps. (2 years).

Practical lesson -3. Design of tunnels for escalators and conveyors

Independent work

The curriculum for the discipline " Designing the connection of ground and underground objects " provides for the implementation of abstracts by students on the subject of the course, which should post an analytical review of publications on the chosen topic. Self-composed essays are carried out on a topic chosen by the student: the values of modernization and the development urban in large cities; the place of underground objects in the infrastructure of the metropolis.

7. Course policy (educational component)

• the graduate student is obliged to attend scheduled lectures, in case of skipping classes the graduate student provides a summary of the missed lecture;

in the classroom is welcome learning activity , prior knowledge of the topics of the lecture, the use of means of communication to search for information on the Internet, dialogic forms of communication; questions with the specifics of graduate dissertation research.

• rules of defense of individual assignments: deadline - two weeks before the end of the semester, defense of individual assignments takes the form of an interview;

• in case of skipping classes without good reason for the topic of the missed lecture is an abstract of 10-12 pages);

• at the end of the semester there is an additional opportunity to pass / retake test scores;

• policy on academic integrity - borrowing materials without reference to the author's work is not allowed , attempts at plagiarism are taken into account when passing the test.

8. Types of control and rating system of assessment of learning outcomes (RSO)

Current control is carried out in the form of a modular test (score 15 points), 3 practical work (each score 5 points), abstracts in the framework of independent work (4 essays, each score 5 points) Distribution of study time by types of classes and tasks in the discipline according to the working curriculum.

Form of study	Credit modules	Total		Distribution of study time by types of classes				Semester certification
		credits	hours	Lectures	Practical (seminar) classes	Laboratory works (computer workshops)	IWS	
Corresp	*Total*	*3*	*90*	*6*	*6*			
	1	*3*	*90*	*6*	*6*			*examination*

Modular tests

Student rating in the discipline consists of points that he receives for:
1) practical classes;
2) modular tests
3) answer the exam
The system of rating (weight) points and evaluation criteria
Student rating in the discipline consists of the following points:

1. Work in practical classes.

Work in a practical lesson: weight score - 5. The maximum number of points in all practical lessons is: 5 points × 3 = 15 points

2. Implementation of practical work - 5 points. The maximum number of points in all practical exercises is: 5 points × 3 \= 15 points

3. Essays on independent work of applicants - 5 points. The maximum number of points for 4 abstracts is 20 points

2. Modular control.
Weight score - 10. The maximum number of points for all tests is: 20 points × 2 = 40 points
- "excellent" complete answer (at least 90% of the required information) -19-20 points;
"very good", a fairly complete answer with minor inaccuracies (at least 90% of the required information) – 16-18 points;
- "good", sufficiently complete answer with minor inaccuracies (not less than 75% of the required information) – 14-15 points,
- "satisfactory", incomplete answer (not less than 60% of the required information) -10-13 points;
- "unsatisfactory", unsatisfactory answer (less than 60% of the required information) - 0 points;

4. Exam - 40 points.
Incentive points for:
- for the tasks of improving didactic materials in the discipline is given from 5 to 10 incentive points.

Calculation of the scale (R) rating:

The sum of weight points of control measures during the semester is:
Rc =15+15+10+20 = 60 points.
The examination component of the scale is equal to 40% of R, namely: 40 points
Thus, the rating scale of the discipline is points.
A prerequisite for admission to the exam is the processing of all missed lectures and practical classes, as well as a starting rating (RC) of not less than 40% of, ie 24 points. assessment with the definition of 4-5 levels.
To obtain the graduate student appropriate grades (ECTS and traditional), his rating R is translated according to the table:

$R = R_C + R_E$	**Rating ECTS**	**Traditional rating**
95...100	A – perfectly	perfectly
85...94	B – very good	good
75...84	C – good	
65...74	D – satisfactorily	satisfactorily
60...64	E – enough (meets the minimum criteria)	
less than 60	Fx – unsatisfactorily	unsatisfactorily
less than 35	F – unsatisfactorily (additional work is required)	not allowed

The method of semester certification is to establish the number of points (the amount of weight points of control measures) for RSO at the time of certification. If the specified amount does not exceed 50% of the maximum value for this period, the student is considered uncertified
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Compiled by: associate professor of Geoengineering, phd., Besarabets LI

Approved by the department (protocol № _

Approved by the Methodical Commission of the faculty [1] (protocol №