O. M. BEKETOV NATIONAL UNIVERSITY OF URBAN ECONOMY IN KHARKIV

Educational and Scientific Institute
energy, information and transport infrastructure

APPROVED
Director ESIETNI
_____ (Igor BILETSKY)
«___» _____ 2021
L.S.

WORK PROGRAMME OF THE COURSE WORK

OBJECT-ORIENTED PROGRAMMING

type	*compulsory OK-20*
semester	*3*
number of ECTS credits	*2*
form of final control	*defence of the practical training report*
language of instruction, teaching and assessment	*English*
department	*Computer Science and Information Technology*

for higher education applicants:

level of higher education	*first (bachelor's degree)*
branch of knowledge	*12 Information Technology*
specialty	*122 Computer Science*
educational programme	*Computer Science*
form of study	*full-time*

2021 – 2022 ACADEMIC YEAR

Developers of the Work Programme of the Course Work

Surname and initials	Position, email	Scientific degree, academic title	Signature
Volodymyr BREDIKHIN	Associate Professor Volodymyr.Bredikhin@kname.edu.ua	Ph.D., associate professor	
Tetyana SENCHUK	Senior Lecturer Tetyana.Senchuk@ kname.edu.ua		

The Work Programme was approved **at the proceedings** of the Department *Computer Science and Information Technology*

Minutes dated «30» 08 2021 No. 2

Head of the Department _____ (Maryna NOVOZHYLOVA)

The Work Programme of the Course Project (Work) corresponds to the Educational Programme: *Computer Science*

Guarantor of the Educational Programme _____ (Mykola PAN)

1. Purpose of the Course Project (Work)

Formation of theoretical knowledge and practical skills in object-oriented programming technology and in-depth mastery of modern C # programming technologies using classes, inheritance and polymorphism.

2. Interdisciplinary connections

The study of the Course Work is directly based on: *"Higher Mathematics", "Algorithm Theory", "Programming"*

3. Learning outcomes

Programme learning outcome	Teaching methods	Forms of evaluation	Learning outcomes of the Course Project (Work)
PRN9. Develop software models of subject environments, choose a programming paradigm from the standpoint of convenience and quality of application for the implementation of methods and algorithms for solving problems in the field of computer science	Verbal, visual, practical	Oral examination, practical test of skills, work defense	Know the technologies of developing algorithms and computer programs, technologies for solving design problems and modern high-level programming languages. Be able to design and develop software using different programming paradigms
PRN10. Use tools for developing client-server applications, design conceptual, logical and physical models of databases, develop and optimize queries to them, create distributed databases, repositories and showcases of databases, knowledge bases, including cloud services, using web languages -programming.			Know the technologies for systematic analysis of design objects and methods of information transfer in information systems. Be able to implement a multilevel computational model based on client-server architecture
PRN11. Have the skills to manage the life cycle of software, products and services of information technology in accordance with the requirements and restrictions of the customer, be able to develop project documentation (feasibility study, terms of reference, business plan, agreement,			Know the technologies for reloading operators for structures and classes, technologies for solving design problems and tools of object-oriented approach. Be able to apply methodologies, technologies and tools to manage the life cycle of information and software systems, products and services of information technology in accordance with customer

contract, contract)			requirements.

4. Programme of the Course Project (Work)

Content module 1. Formulation of the problem and creation of an infological model of the subject area.
The questions concerning the concept of object-oriented analysis, the object model of the subject environment, the principles of its construction and the concept of objects and classes and their relationships are considered.

Content module 2. Development and testing of software modules.
The questions are what are constructors, destructors, classes and objects, object attributes and class interface, class implementation.

Content module 3. Preparation and defense of the report.
Preparation of a presentation on the results of work and writing an explanatory note in accordance with the standards of document flow.

5. Structure of the Course Project (Work) and distribution of time

Content modules	Number of hours (independent work)
MODULE (semester)	**60**
Content module 1	15
Content module 2	15
Content module 3	15
Final control	15

6. Methods of control and the procedure for assessing learning outcomes

The current control system is based on the use of such forms of control as an oral examination of the course materials and the content of the course work.

Oral questioning based on the results of the completed task, practical testing of skills and abilities for designing a system of classes and their implementation by means of the C # language.

Final control diff. credit (3rd semester) in the form of an oral examination on the materials of the course work.

Structure of the Course Project (Work) and distribution of points

Content modules	Maximum number of points
MODULE (semester)	100
Content module 1	20
Content module 2	20
Content module 3	20
Final control	40

Types of the tasks, means of control and maximum number of points

Types of the tasks and means of control	Distribution of points
Content module 1	**20**
Overview of sources on the topic	10
Description of classes in the form of a class diagram	10
Content module 2	**20**
Software implementation in C #.	10
Testing the program using C #.	10
Content module 3	**20**
Review of the explanatory to the course project	10
View a presentation for a course project	10
Final control – public defence	**40**
Making a report in accordance with the requirements	10
Illustrative part	10
Presentation	10
Defence of the report	10
TOTAL FOR THE MODULE	**100**

Grading scale

The sum of points for all types of educational activities	Score on a national scale	
	for the exam, diff. test	for test
90-100	excellent	passed
82-89	good	
74-81		
64-73	satisfactory	
60-63		
35-59	unsatisfactory with the possibility of retaking	failed with the possibility of retaking
0-34	unsatisfactory with compulsory re-study of the discipline	failed with compulsory re-study of the discipline

7. Material and technical and information support

Methodical support

1. Distance course in the discipline "Object-Oriented Programming" in a virtual educational environment on the platform Microsoft Teams. Access mode: https://teams.microsoft.com/_#/school/files/%D0%9E%D0%B1%D1%89%D0%B8%D0%B9?threadId=19:27da5a9b51d640d9834115a0f84446cd@thread.tacv2&ctx=channel&rootfolder=%252Fsites%252FCS2020-

2aBocharov%252FShared%2520Documents%252FGeneral%252FObject-oriented%2520programming%252FCourse%2520Work

Recommended literature and information resources

1. C# 8.0 Pocket Reference: Instant Help for C# 8.0 O'reilly Media, 2019. - p. 248.
2. C#: Learn C# in One Day and Learn It Well. Jamie Chan, 2020. - p. 170.
3. Beginning Object-Oriented Programming with C# 1st Edition, Kindle Edition by Jack Purdum - John Wiley & Sons, Inc., 2020, - 628 p.
4. Practical Object-Oriented Design An Agile Primer Using Ruby6 Sandi Metz - John Wiley & Sons, Inc., 2020, - 462 p.
5. Object Oriented Programming Dr Robert Harle Access mode: https://www.cl.cam.ac.uk/teaching/0910/OOProg/OOP.pdf

Hardware, equipment, software products

№ s / n	Name of computer laboratory, its area sq. meters	Academic discipline	Number of personal computers with a service life of not more than eight years	Name of application packages (including licensed) Availability of	Internet access channels (yes / no)
1	Laboratory of computer and microprocessor systems and devices № 218A ck,	Object-oriented programming	12 11 Impression Intel Celeron J1800, O3У 4 G, HDD 500 G (2015, 2016, 2018) 1 Solti Intel Celeron J1800, RAM 4 G, HDD 500 G (2014) Epson M2170	Microsoft Office Professional Microsoft Visual- studio-20 10-express Maxima, MathCad	yes
2	Laboratory of corporate network technologies № 218B ck,	Object-oriented programming	15 Impression Intel Celeron J1800, RAM 4 G, SSD 128 G(2016)	Microsoft Office Professional Microsoft Visual- studio-20 10-express	yes

Actualization sheet

Work programme of course project (work) for 202_-202_ academic year reviewed and approved with no changes.

Full name of course project (work)

type	*compulsory / optional, EP code*
semester	*semester number*
number of ECTS credits	*number of ECTS credits*
form of final control	*defence of the course project (work)*
language of instruction, teaching and assessment	*English*
department	*the name of the department that provides course project (work)*

for higher education applicants:

level of higher education	*first (bachelor's degree) / second (master's degree) / third (educational and scientific)*
branch of knowledge	*code and full name of the branch of knowledge*
specialty	*code and full name of the specialty*
educational programme	*full name of the educational programme*
form of study	*full-time /evening / extramural / distance*

Head of the Department _____

«____»_____ 202_ _____ (_____)

Guarantor of the Educational Programme
«____»_____ 202_ _____ (_____)