Backend development using PHP
(name of academic discipline)

SYLLABUS

first (bachelor) level
(level of higher education)

field of knowledge __12 - Information technology__
(code and name)

specialty __123 - Computer engineering__
(code and name)

specialization * _____
(name)

type of discipline ___elective_____

compulsory / elective

Ivano-Frankivsk-2021

The syllabus of discipline **"**Backend Development using PHP for students studying according to the educational program "Computer engineering" for obtaining the educationally-qualifying level – **bachelor's degree** in Computer engineering.

Developer:
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The syllabus was considered and approved at the meeting of the Oil and Gas Production Department
Protocol on «30 » August 2021 № 1.

Head of the Department Computer Systems   _____ S.I. Melnychuk
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1 DESCRIPTION OF THE EDUCATIONAL DISCIPLINE

The resource of hours for studying the discipline "Backend Development using PHP" in accordance with the current RNP, its distribution in semesters and types of educational work for different forms of education is described in Table 1.

Table 1 - Distribution of hours allocated to studying the discipline

Name of indicators	Total		Distribution by semesters			
			Semester 5		Semester 6	
	Full-time study (FTS)	Part-time study (PTS)	Full-time study (FTS)	Part-time study (PTS)	Full-time study (FTS)	Part-time study (PTS)
Amount of credits ECTS	4	4	4	4		
Number of modules	1	1	1	1		
Total amount of time, hours	120	120	120	120		
Auditorium classes, hours incl.:	54	10	54	10		
lectures	18	6	18	6		
seminars	-	-	-	-		
practical classes	-	-	-	-		
laboratory classes	36	4	36	4		
Individual work, hours incl.:	66	110	66	110		
performing of course work	-	-	-	-		
performing of control tests (calculation and graphic works)	-	-	-	-		
processing of the material outlined in lectures	20	40	20	40		
processing of material submitted for individual study	28	50	28	50		
preparation for practical classes and control tests	20	40	20	40		
preparation of reports on laboratory works	10	20	10	20		
preparation for the exam	-	-	-	-		
Form of the semester control	Differentiated credit		Differentiated credit			

2 PURPOSE AND RESULTS OF LEARNING

The purpose of studying the discipline - the acquisition of competencies in the development of software based on popular content management systems

As a result of studying the discipline the student must demonstrate the following **learning outcomes** through knowledge, skills and abilities:

- Be able to search for information in various sources to solve problems of computer engineering.

- Know the latest technologies in computer engineering.

- Perform work qualitatively and achieve the set goal in compliance with the requirements of professional ethics.

The study of the discipline involves the formation and development of students' competencies provided by the relevant standard of higher education in Ukraine:

General:
- The ability to learn and master modern knowledge.
- Ability to apply knowledge in practical situations.

Professional:

ability to use modern methods and programming languages for the development of algorithmic and software.

Ability to systematically administer, use, adapt and operate existing information technologies and systems

Ability to design systems and their components taking into account all aspects of their life cycle and tasks, including creation, configuration, operation, maintenance and disposal.

3 PROGRAM AND STRUCTURE OF THE DISCIPLINE

C.1 Thematic plan of lectures

Plan of lectures discipline characterizing Table 2.

Table 2 -themed plan lectures

Modules, thematic modules and themes code	Names of modules (M), thematic modules (TM), themes (T) and their content	Amount of hours		References	
		FTS	PTS	ordinal number	chapter, unit
M 1	**Backend development using PHP**	**18**	**6**		
TM1	**Backend development using PHP**	**18**	**6**		
T 1.1	Basics and purpose of server languages. HTTP requests and server responses. Basics of PHP language and processing of PHP-files	2	2		
T 1.2	Data types in PHP, variables, expressions, and operators that control structures in PHP.	**2**			
T 1.3	Arrays. Standard functions for working with data types. Functions declared by the user	**2**			
T 1.4	Objects and classes. Namespaces.	**2**			
T 1.5	Input and output. Read data from local files. Reading from third-party sources using CURL	**2**	2		
T 1.6	Object relation model, Working with MySQL database	**2**	2		
T 1.7	Authentication. Sessions in PHP. Hashing and storing passwords in a database.	**2**			
T 1.8	MVC model. Using the MVC model.	**2**			
T 1.9	Testing and software life cycle in PHP	**2-**			

Total:

M1 - content modules 1

3.2 Topics of laboratory classes

Topics of laboratory classes of the discipline are given in table 3.

Table 3 - Topics of laboratory classes

Modules, thematic modules and themes code	Names of modules (M), thematic modules (TM), themes of laboratory classes (L) and their content	Amount of hours		References	
		FTS	PTS	ordinal number	chapter, unit
M 1	**Backend development using PHP**	**36**	**4**		
3M1	**Backend development using PHP**	**36**	**4**		
L 1.1	Basics of working in PHPStorm. Working with Git for PHP projects. The first program in PHP	2	2		
L 1.2	LAMP stack deployment (WAMP, MAMP). Basics of server configuration. Apache configuration files. Php.ini file	2	2		
L 1.3	Solving simple algorithmic problems using PHP language	4			
L 1.4	Use functions to perform standard operations and reuse code	2			
L 1.5	Using OOP concepts in PHP development	4			
L 1.6	Working with files in PHP. Configuration files and CSV files	2			
L 1.7	Processing data from third-party resources using CURL. JSON and XML formats. Debugging tools	4			
L 1.8	Connecting to the database. CRUD-operations with databases	4			
L 1.9	Working with sessions in PHP	2			
L 1.10	Functions of work with mail	2			
L 1.11	Development of MVC-applications in PHP.	6			
L 1.12	Using PHPUnit for unit testing applications	2			

3.3 Tasks for independent work of the student

Types of independent work and its general balance are characterized by table 4.

Code	Names of modules (M), content modules (TM), topics (T) and their content	Volume of hours		References	
		DFN	ZFN	serial number	section, subsection
M 1	**Backend development using PHP**	**66**	**110**		
TM1	**Backend development using PHP**	**66**	**110**		
T1.1	Work with Composer and standard pre-installed packages	22	22		
T1.2	Using design patterns in server-side web applications	22	44		
T1.3	CD / CI basics for PHP projects. Use Bitbucket and Github capabilities for CD / CI	22	44		

4 EDUCATIONAL METHODOLOGICAL SUPPORT

4.1 Main literature

1. PHP Notes for Professionals https://books.goalkicker.com/PHPBook/
2. PHP - The right way https://phptherightway.com/
3. PHP8 Documentation https://www.php.net/releases/8.0/en.php
4. PHP Exercises https://www.phpexercises.com/
5. PHP/MySQL Database Applications
http://web.deu.edu.tr/doc/misc/ebook_PHP_MySQL_PHP_Database_Applications_IDG_
Books_Jay_Greenspan.pdf
6. PHPUnit Book https://phpunit.de/manual/6.5/en/phpunit-book.pdf

5 CONTROL METHODS AND SCORE SCHEME

Detailed information on methods of control of students' knowledge in lectures, practical and laboratory classes is given. An example of a scoring scheme for assessing students' knowledge of the discipline is given in Table 4. According to Table 4 at the beginning of the semester, a work plan of the discipline is developed.

Table 4 - Scheme of accrual of points in the process of assessing students' knowledge of the discipline "Backend Development using PHP"

Types of controlled work	Maximum number of points
Module 1	
Control of theoretical knowledge acquisition of the content module MR1	28
Control of skills in performing and defending reports from seven laboratory works (12*6)	72
Total	100

Differentiated credit in the discipline is given to the student in accordance with the current rating scale, which is given below.

Assessment scale: national and ECTS

Sum of points for all types of educational activities	Assessment ECTS	Assessment on a national scale
		for exam, differentiated test, course project (work), practice
90 - 100	A	excellent
82-89	B	good
75-81	C	good
67-74	D	satisfactory
60-66	E	satisfactory
35-59	FX	unsatisfactory with the possibility of re-taking
0-34	F	unsatisfactory with mandatory re-study of disciplines