

МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
ХАРКІВСЬКИЙ НАЦІОНАЛЬНИЙ ЕКОНОМІЧНИЙ УНІВЕРСИТЕТ
ІМЕНІ СЕМЕНА КУЗНЕЦЯ

ЗАТВЕРДЖЕНО

на засіданні кафедри
інформаційних систем
Протокол № 1 від 22.08.2023 р.

ПОГОДЖЕНО

Проректор з навчально-методичної роботи

Каріна ПЕМАШКАЛО



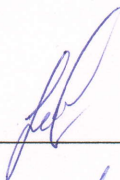
ВЕБ-ПРОГРАМУВАННЯ

робоча програма навчальної дисципліни (РПНД)

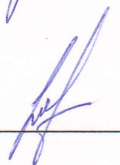
Галузь знань	12 "Інформаційні технології"
Спеціальність	121 "Інженерія програмного забезпечення"
Освітній рівень	перший (бакалаврський)
Освітня програма	"Інженерія програмного забезпечення"

Статус дисципліни	обов'язкова
Мова викладання, навчання та оцінювання	англійська

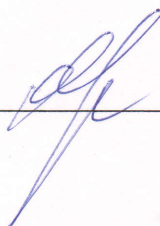
Розробник:
к.т.н., доцент


Дмитро БОНДАРЕНКО

Завідувач кафедри
інформаційних систем


Дмитро БОНДАРЕНКО

Гарант програми


Олег ФРОЛОВ

Харків
2024

INTRODUCTION

The functioning of modern organizational and organizational-technical objects used in various spheres of human activity lead to an increase in information. The web now serves as a platform for promoting goods and services, alongside providing and providing information and entertainment content for users. The latest technologies for the development of web resources make it possible to realize needs in various areas of the use of information technologies, from the provision of information services to the sale of goods.

The course “Web programming” provides the development of knowledge and skills in the field of creating web pages using the markup language, cascading style sheet and script programming language. In the process of studying this course, applicants will get acquainted with the possibilities of using modern methods of developing web pages and supporting already existing web resources.

The purpose of studying the course " Web programming " is to provide future specialists with the theoretical knowledge and practical skills necessary to solve issues related to the design and development of websites in the global Internet using modern tools. The tasks of the course are the acquisition by students of knowledge about modern approaches to the construction of the client side of web pages and their interaction with the user.

The object of the course is the program code.

The subject of the course “Web programming” is web technologies, as well as methods of their use in the development of sites for various purposes and creation of the client part of web systems.

The learning outcomes and competence formed by the course are defined in the table. 1.

Table 1

Learning outcomes and competences formed by the course

Learning outcomes	Competencies
LO08	GC05, GC06, SC01, SC10, SC13, SC14
LO17	GC02, SC10, SC12, SC13

where, LO08. Be able to develop a human-machine interface.

LO17. Be able to apply component-based software development methods.

GC02. Ability to apply knowledge in practical situations.

GC 05. Ability to learn and master modern knowledge.

GC 06. Ability to search, process and analyze information from various sources.

SC01. Ability to identify, categorize and formulate software requirements.

SC 10. The ability to accumulate, process and systematize professional knowledge about creating and maintaining software and recognizing the importance of lifelong learning.

SC 12. Ability to carry out the system integration process, apply change management standards and procedures to maintain the integrity, overall functionality and reliability of the software.

SC 13. Ability to reasonably choose and master tools for software development and maintenance.

SC 14. Ability to think algorithmically and logically.

COURSE CONTENT

Content module 1. Basics of modern Web technologies

Topic 1. Features of front-end and back-end development

Static and dynamic web pages. Web development process.

Topic 2. The essence of the World Wide Web. Features of Internet browsers

Responsibilities and tasks of Front-end developer. Properties and difference of Internet browsers.

Topic 3. HTML (Hyper Text Markup Language)

HTML overview. Basic tags. Block and linear elements.

Topic 4. Formatting headers and text in HTML. Adding objects

Semantics. HTML5 elements. Formatting text, hyperlinks and working with images.

Topic 5. Basics of working with CSS. Plugging in CSS and applying styles

CSS connection options and style application order, relative values in CSS.

Topic 6. Reference to CSS elements. BOX-model

Box-model and reference to elements.

Content module 2. Interactive Web technologies

Topic 7. Selectors and their priority. Grouping selectors

Selectors, importance of selectors, grouping and shorthand.

Topic 8. Relative values in CSS

Imitation and positioning, order of application of styles.

Topic 9. Scope of Javascript. Javascript connection

Javascript scope and Javascript connection options.

Topic 10. Variables, data types and arrays in Javascript

Types of variables and data types, use of arrays.

Topic 11. Arithmetic and assignment. Interaction with the user

Methods of interaction with the user. Arithmetic operations in Javascript.

Topic 12. Conditions and cycles. Using frameworks.

Using conditions and loops. DOM document model. Using frameworks.

List of laboratory tasks by course are given in table. 2.

Table 2

List of laboratory studies

Title of the topic and task	Content
Topic 1-2. Task 1.	Creating an HTML page. Formatting text and creating headings
Topic 3-4. Task 2.	Creation of objects using HTML: lists, forms, tables, media data
Topic 5-6. Task 3.	Connecting CSS and using selectors
Topic 7-8. Task 4.	CSS element reference options. Box-model
Topic 9-10. Task 5.	Javascript connection. Using variables and working with arrays.
Topic 11-12. Task 6.	Interaction with the user. Application of conditions and cycles

The list of self-study work by course is given in the table. 3.

Table 3

List of self-studies

Topic name	Content
Topic 1 - 12	Studying lecture material
Topic 1 - 12	Preparation for laboratory studies
Topic 1 - 12	Preparation for the exam

The number of hours of lectures, laboratory classes, and hours of self-study work is given in the technological map for the course.

TEACHING METHODS

In the course of teaching the course, the teacher uses explanatory-illustrative (informational-receptive) and reproductive teaching methods. Thus, during lectures, the teacher provides students with a certain amount of theoretical material, with explanations in graphic form (diagrams, tables, presentations). At the laboratory classes, students have the opportunity to acquire practical problem-solving skills based on the problem formulated according to the subject of the class. Improvement of practical skills occurs during the performance of individual tasks and self-study work.

Lectures (topics 1-12), presentations (topics 1-12), laboratory studies (topics 3-12) are used as teaching methods aimed at activating and stimulating the educational and cognitive activity of the applicants.

FORMS AND METHODS OF ASSESSMENT

The University uses a 100-point cumulative system for assessing the learning outcomes of students.

Current control is carried out during lectures, practical, laboratory and seminar classes and is aimed at checking the level of readiness of the student to perform a specific job and is evaluated by the amount of points scored:

for courses with a form of semester control as an exam: maximum amount is 60 points; minimum amount required is 35 points.

The final control includes current control and an exam.

Semester control is carried out in the form of a semester exam

The final grade in the course is determined:

– for disciplines with a form of exam, the final grade is the amount of all points received during the current control and the exam grade.

During the teaching of the course, the following control measures are used:

Current control: presentation of laboratory work (45 points), current control work (10 points), express test (5 points).

Semester control: Grading including Exam (40 points).

An example of an exam card and assessment criteria.

Semyon Kuznets Kharkiv National University of Economics
First (bachelor) level of higher education
Specialty "Software Engineering"
Educational and professional program "Software engineering" .
Semester I
The course "Web programming"

EXAM CARD

Question 1 (1 point)

How to correctly issue a numbered list?

- Place the `` tags inside the `` tags, inside which to write the text
- Simply write text in the format: number, period, space, text, line feed. The browser automatically recognizes this structure
- Separate each line with a tag on each new line before the text add a number, a period and a space

Question 2 (1 point)

The task for the developer is to place the text in a 100px x 150px block. The block should deviate from the borders of the page by 10 cm from the top and 5 from the left, and the text from the borders of the block - 5 pixels from the top, 15 to the left and right, and 10 from the bottom. How to properly implement this task?

a)

```
<style>
.block {
  width: 100px;
  height: 150px;
  padding-top: 10 cm;
  padding-left: 5 cm;
  margin: 5px 15px 10px;
}
</style>
<div class="block">
  Lorem ipsum dolor sit amet, consectetur adipiscing elit,
  sed diam nonummy nibh euismod tincidunt ut laoreet
  dolore magna aliquam erat volutpat.
</div>
```

b)

```
<style>
.block {
  width: 100px;
  height: 150px;
  margin-top: 10 cm;
  margin-left: 5 cm;
  padding: 5px 15px 10px;
}
</style>
<div class="block">
  Lorem ipsum dolor sit amet, consectetur adipiscing elit,
  sed diam nonummy nibh euismod tincidunt ut laoreet
  dolore magna aliquam erat volutpat.
</div>
```

Question 3 (2 points)

What is the meaning of "variable"?

```
let variable = 0;
let i = variable + 10;
for( ; i < 20; i ++ ) {
  variable += i + 10;
}
```

- undefined
- 200
- 245
- 2452

Evaluation criteria

The exam card consists of three blocks of tasks. The final grade for the exam is the sum of the marks for each task block. In general, the completed examination work is evaluated on a 40-point scale. The exam card contains 30 test tasks. At the same time: tasks from the first block - 10 points, tasks from the second block - 10 points, tasks from the third block - 20 points. Answers to test questions can include both choosing one correct option and multiple choices.

The task from block 1 is evaluated as follows.

The task tests competences in the basics of modern web technologies, HTML5 semantics and syntax, working with objects and links, block and tabular layout. The block contains 10 questions, each correct answer - 1 point.

The task from block 2 is evaluated as follows.

The task checks competences in applying CSS styles, grouping selectors, using different types of object positioning and working with BOX-model. The block contains 10 questions, each correct answer - 1 point.

The task from block 3 is evaluated as follows.

The task tests competencies in the use of interactive web technologies: variables and data types in Javascript, work with arrays, user interaction, application of functions, conditions and cycles, work with the document DOM model. The block contains 10 questions, each correct answer - 2 points.

RECOMMENDED LITERATURE

Main

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3. JavaScript: The Definitive Guide: Master the World's Most-Used Programming Language. 2020. David Flanagan. O'Reilly Media; 7th edition (June 23, 2020) [Електронний ресурс]. – Режим доступу: <https://github.com/camovoverride/lit/blob/master/Javascript-The-Definitive-Guide.pdf>.

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Information resources

7. Актуальні технології веб-розробки [Електронний ресурс]. – Режим доступу: <http://www.w3.org/Consortium/facts>

8. Charles Severance. Web Applications for Everybody [Електронний ресурс]. – Режим доступу: <https://www.wa4e.com>

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10. Додатковий матеріал по CSS: Learn Layout(en) [Електронний ресурс]. – Режим доступу: <http://learnlayout.com>

9. Медіа-запити CSS та їх використання для мобільних пристроїв. – [Електронний ресурс]. Режим доступу: <https://freehost.com.ua/ukr/faq/articles/chto-takoe-media-zaproshi-css-i-dlja-chego-oni-nuzhni/>.

10. Сайт ПНС ХНЕУ ім. С. Кузнеця. Веб-програмування, доц. Бондаренко Д.О. [Електронний ресурс]. – Режим доступу: <https://pns.hneu.edu.ua/course/view.php?id=9032>