**KAZAKH-BRITISH TECHNICAL UNIVERSITY**

**SCHOOL OF APPLIED MATHEMATICS**

**Approved by**

**Dean of School of Applied Mathematics**

**\_\_\_\_\_\_\_\_\_\_\_\_ A.V. Sinitsa**

**« 23 » August 2023**

**Syllabus**

**Web programming**

Semester: Fall 2023

2023/2024 Academic Year

3 credits (1/0/2)

**Instructor:** Mustafayeva Ardak Bolatkyzy, senior lecturer

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Personal Information about the Instructor** | **Time and place of classes** | | **Contact information** | |
| **Lessons** | **Office Hours** | **Tel.:** | **e-mail** |
| Senior lecturer | According to the schedule | TBA |  | a.mustafaeva@kbtu.kz |

**COURSE DURATION:** 3 credits, 15 weeks, 45 class hours

**COURSE DESCRIPTION**

# Course Objectives:

“Web Programming” course aims to familiarize students with the technology of designing the structure of a website as an information system, technologies for building a website means of client- side programming and server technologies placement, support and maintenance of a website on the server. This course is aims at improving the skills of the student to develop advanced websites. The course supported by the advanced practicum.

Task of the discipline is to acquire practical knowledge of the technology web programing. During the program, students must learn consciously explore modern technologies of web programing.

# Competition (learning outcomes):

At the end of this course a student must

* *to know*:
  + the structure and technology of high-performance web-projects;
  + the classification, the basic properties of specialization and the PHP programming language.
* *be able*:
  + to develop dynamic websites using new technologies;
  + to develop algorithms and programs in the programming languages.
* *to own:*
  + the languages of web-programming;
  + modern technology in creating high-performance web-projects.

**Pre requisites:** Computer science; Information Technologies

**In evaluating the performance of the student during the semester to consider the following:**

* Attendance
* Active and productive participation in practical exercises
* Study of basic and additional literature
* Homework
* Implementation of the CDS
* Timely delivery of all jobs **(for the late delivery of a rating of three CDS AW)**

**REFERENCES**

**Main:**

1. Jason Beaird, James George. The Principles of Beautiful Web Design // Third Edition. –

SitePoint, 2014. – 240 p.

1. R. Nixon. Learning PHP, MySQL, JavaScript, and CSS, 2nd Edition. – O'Reilly Media, 2012.

– 582 p.

1. Jon Duckett. HTML and CSS: Design and Build Websites. – John Wiley and Sons, Inc., 2011.

– 512 p.

1. D. Sklar, A. Trachtenberg. PHP Cookbook // Third Edition. – O’Reilly Media, 2014. – 820 p.
2. Paco Hope, Ben Walther. Web Security Testing Cookbook: Systematic Techniques to Find Problems Fast. – O’Reilly Media, 2008. – 314 p.

# Optional:

1. G. Schlossnagle. Advanced PHP Programming. – Williams, 2006. – 624 p.
2. K. Rungta. PHP with Guru99. – Smashwords, 2013. – 151 p.

#### COURSE CALENDAR

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Week** | **Class work** | | | | **SIW (student’s individual work)** |
| **Topic** | **Lectures** | **Seminars** | **Chapters for reading** |
| 1 | The internet and world wide web.  What is the internet? The world wide web (www).  *Seminar #1. Create basic HTML pages.* | 1 | 2 | according to the lecture notes |  |
| 2 | HTML basics. Basic HTML. More HTML elements. Web standards.  *Seminar #2. Create basic HTML pages.“About Me” Page.* | 1 | 2 | according to the lecture notes |  |
| 3 | CSS for styling. Basic CSS. CSS properties. More CSS syntax.  *Seminar #3. Basic HTML and CSS.* *Style the Page with CSS. Validate the page and CSS. Upload the Page to the Web.* | 1 | 2 | according to the lecture notes | *SIW 3*  *Web site about traveling.*  *HTML Content. Fonts and Colors. Text and List Properties. Targeting Elements with IDs and Classes. Sections. Boarders. Margins and Padding.* |
| 4 | Page layout. Styling page sections. Introduction to layout. Floating elements. Sizing and positioning.  *Seminar #4. Page layout. Styling page sections. Introduction to layout. Floating elements. Sizing and positioning.* | 1 | 2 | according to the lecture notes |  |
| 5 | PHP. Server-side basics. PHP basic syntax. Embedded PHP. Advanced PHP syntax.  *Seminar #5. Solving corresponding problems. 4 tasks.* | 1 | 2 | according to the lecture notes | *SIW 5*  *Word of the day.*  *Index Page. Word Definition Page.* |
| 6 | Forms. Form basics. Form controls. Submitting data. Processing form data in PHP.  *Seminar #6. Forms. Form basics. Form controls. Submitting data. Processing form data in PHP.* | 1 | 2 | according to the lecture notes | *SIW 6*  *Guess the number game.*  *Selecting Random Number. Submitting Guesses.*  *Timer for the game.* |
| 7 | Relational databases and SQL. Database basics. SQL. Multi-table queries. Querying a database in PHP.  *Seminar #7. Create well-designed pages. Group Project.* | 1 | 2 | according to the lecture notes | *SIW 7*  *SQL Queries.*  *Login to Database Server. Test Running a Query in PHP. Practice Queries (Single Table). Practice Queries (Multi Table Joins).* |
| 8 | JavaScript.  Key JavaScript concepts. JavaScript syntax. Program logic. Advanced JavaScript syntax.  *Seminar #8. JavaScript for Interactive User Interfaces. Create User Interface Elements. Bigger Pimpin’ Button. Bling Checkbox. Snoopify.* | 1 | 2 | according to the lecture notes | *SIW 8*  *Hangman.*  *Initial HTML/CSS Code. Choosing a Word with JavaScript. Making Guesses. Right and Wrong Guesses.* |
| 9 | The Document Object Model (DOM). Global DOM objects. DOM element objects. The DOM tree.  *Seminar #9. JavaScript DOM and Events.*  *Create basic DOM Elements. Single Boundary turns red.* | 1 | 2 | according to the lecture notes | *SIW 9*  *Colored squares.*  *Initial HTML/CSS Code. Creating Squares. Add Squares, Change Colors. Clickable Squares.* |
| 10 | Prototype and Scriptaculous. Prototype. Scriptaculous.  *Seminar #10. Web Services and Scriptaculous.*  *PHP Web Service v1. PHP Web Service v2. Switch Starter. JavaScript v1. JavaScript v2. JavaScript v3.* | 1 | 2 | according to the lecture notes |  |
| 11 | Events. Event handling.  *Seminar #11. JavaScript DOM and Events.*  *All boundaries glow red on hover. Alerts on Successful completion of maze. Restartable maze.* | 1 | 2 | according to the lecture notes | *SIW 11*  *Multiplication quiz.*  *Initial HTML/CSS Content. Problems and Guesses. Time Limits.* |
| 12 | AJAX, XML, and JSON.  AJAX concepts. Using XMLHTTPRequest to fetch data. XML. JSON.  *Seminar #12. Single definition. Single definition and author from XML. All definitions. Tidying Up and Loading Animation.* | 1 | 2 | according to the lecture notes |  |
| 13 | Web design. User-centered design. Page layout. Accessibility  *Seminar #13. Adventure recommender.*  *Index Page. Adventure Recommendations Page.* | 1 | 1 | according to the lecture notes |  |
| 14 | Cookies and sessions.  Cookie basics. Programming with cookies. Sessions.  *Seminar #14. Create and Manage cookies and sessions.* | 1 | 2 | according to the lecture notes | *SIW 14*  *User login system.*  *Basic HTML/CSS Content. User Login Page. Grades and Teachers Pages. Restricting Access. Logging Out. Adding "Flash" Messages.* |
| 15 | Web security.  Security principles. Cross-site scripting (XSS). Validating input data. SQL injection. Session-based attacks.  *Seminar #15. Practice with web security. Group Project* | 1 | 2 | according to the lecture notes |  |

**COURSE ASSESSMENT PARAMETERS**

|  |  |
| --- | --- |
| Attendance and activity on lessons | 7% |
| Seminars | 33% |
| Midterm/Endterm | 20% |
| Final exam | 40% |
| **Total** | **100%** |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **No** | **Assessment criteria** | **Weeks** | | | | | | | | | | | | | | | | **Total** |
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16-17** |
| 1. | Attendance and activity on lessons | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |  |  | 7 |
| 2. | Seminars | 1 | 2 | 3 | 3 | 3 | 3 |  | 1 | 3 | 3 | 3 | 3 | 3 | 2 |  |  | 33 |
| 3. | SIW |  |  |  |  |  |  | 10 |  |  |  |  |  |  | 10 |  |  | 20 |
| 6. | Final  examination |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 40 | 40 |
|  | Total |  |  |  |  |  |  |  | 30 |  |  |  |  |  |  | 30 | 40 | 100 |

**Lectures** are conducted in the form ofexplainingthe theory given in the course that is why students supplied with handouts uploaded into the intranet. Activity and attendance on lessons is mandatory. Mandatory requirement is preparation for each lesson.

**Grading policy:**

Intermediate attestations (on 7th and 15th week) join topics of all lectures, laboratories, homework, quiz and materials for reading discussed to the time of attestation. Maximum number of points within attendance, activity, homework, quiz and laboratories for each attestation is 30 points.

Final exam joins and generalizes all course materials, is conducted in the complex form with questions and problems. Final exam duration is 120 min. Maximum number of points is 40. At the end of the semester you receive overall total grade (summarized index of your work during semester) according to conventional KBTU grade scale.

### ACADEMIC POLICY

**Students are required:**

* to be respectful to the teacher and other students;
* to switch off mobile phones during classes;
* DO NOT cheat. Plagiarized papers shall be graded with zero points!
* to come to classes prepared and actively participate in classroom work; to meet the deadlines;
* to enter the room before the teacher starts the lesson;
* to attend all classes. No make-up tests or quiz are allowed unless there is a valid reason for missing it;
* to follow KBTU academic policy regarding **W, AW, I, F** grades.
* When students are absent for 20% of the lessons or more (without Spravka), then their grade is F.
* When students have a score of 29 or less for attestation 1 added to attestation 2, then their grade is F.
* When students have a score of 19 or less (less than 50%) for their final exam, then their grade is F.
* When students do not come for their final exam, then their grade is F.

**Students are encouraged to**

* consult the teacher on any issues related to the course;
* make up within a week’s time for the works undone for a valid reason without any grade deductions;

*Considered in meeting of School of Applied Mathematics,*

*minutes № 1, «23» August 2023 year.*

*Senior Lecturer \_\_\_\_\_\_ Mustafayeva Ardak Bolatkyzy*