#### card of course

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| Subject name | Introduction to Frontend Technologies |

1. The placement of the subject in the study system

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| 1.1. Field of study | Computer science |
| 1.2. Form and path of study | Full-time/Part-time |
| 1.3. Level of education | First-cycle studies |
| 1.4. Study profile | Practical |

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| 1. 5. Specialty | Web Technologies and the Internet of Things |
| 1.6. Subject Coordinator | Mgr Przemysław Sujka |

2. General characteristics of the subject

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| 2.1. Belonging to a subject group | Directional/Practical |
| 2.2. Number of ECTS | 4 |
| 2.3. Language of lectures | English |
| 2.4. Semesters in which the subject is taught | IV |
| 2.5.Criteria for selecting course participants | For students who have chosen the specialization Web Technologies and the Internet of Things |

1. Learning outcomes and course delivery
   1. Subject Objectives

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| No. | Subject Objectives |
|
| C1 | Introducing students to the basics of front-end technologies, including HTML, CSS, and JavaScript. |
| C2 | Developing skills in designing and implementing simple user interfaces. |
| C3 | Preparation for further development in the area of front-end technologies and web application development. |

* 1. Subject-specific learning outcomes, divided into knowledge , skills and competences , with reference to the directional learning outcomes

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| --- | --- | --- | --- | --- | --- | --- |
| No. | Description of subject  learning outcomes | Reference to  directional effects  learning (symbols) | Method of implementation (mark "X") | | | |
| ST | | NST/ZD | |
| Classes at the University | Activities on  the platform | Classes at the University | Activities on  the platform |
| After passing the course, the student knows and understands **the knowledge** | | | | | | |
| W1 | Knows the basic components of front-end technologies such as HTML, CSS, and JavaScript. | INF\_W07, INF\_W19, INF\_W20 | X |  |  | X |
| W2 | Understands the principles of designing responsive user interfaces using CSS. | X |  |  | X |
| W3 | Knows basic JavaScript programming techniques, including DOM manipulation and event handling. | X |  |  | X |
| W4 | Understands the importance of frontend frameworks and libraries, such as Bootstrap and React, in the application development process. | X |  |  | X |
| W5 | Familiar with basic tools and environments supporting front-end development, such as code editors and browser debugging tools. | X |  |  | X |
| After passing the course, the student is **able** to: | | | | | | |
| U1 | Can create web page structures using HTML. | INF\_U19, INF\_U28 | X |  | X |  |
| U2 | Can use CSS for styling and creating responsive layouts. | X |  | X |  |
| U3 | Can write simple JavaScript scripts to manipulate the DOM and interact with the user. | X |  | X |  |
| U4 | Is able to use frontend tools such as DevTools to debug and optimize code. | X |  | X |  |
| U5 | Can integrate core libraries and frameworks into frontend projects. | X |  | X |  |
| After completing the course, the student is ready to take part in **social competences.** | | | | | | |
| K1 | The student is able to plan work in a team and assign tasks to the team. The student is able to use the GIT version control system. | INF\_K04 INF\_K06 | X |  | X |  |
| K2 | The student is able to work in a team and understands what concurrent work control is. | X |  | X |  |

3.3. Forms of teaching and their number of hours - Full-time studies (ST), Part-time studies (NST)

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Path | Lecture | Exercises | Design | Workshop | Laboratory | Seminar | Lecturer | Classes conducted using distance learning methods and techniques in the form of a lecture | Other | **ECTS points** |
| **ST** | 20 |  |  |  | 30 |  |  |  |  | 4 |
| **NST** |  |  |  |  | 15 |  |  | 10 |  | 4 |

3.4. Content of education (separately for each form of classes: (W, ĆW, PROJ, WAR, LAB, LEK, OTHER). It should be marked (X) how the given content will be implemented (classes at the university or classes on the e-learning platform conducted using distance learning methods and techniques)

TYPE OF CLASS: LECTURE

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| --- | --- | --- | --- | --- | --- | --- |
| No. | Content of the course | Reference to subject-specific learning outcomes | Method of implementation (mark "X") | | | |
| ST | | NST/ZD | |
| **Classes at the University** | **Activities on  the platform** | **Classes at the University** | **Activities on  the platform** |
| 1. | Overview of basic front-end technologies and their applications, introduction to the structure of websites using HTML. | W1 | X |  |  | X |
| 2. | An overview of web styling techniques, including the principles of using CSS and creating responsive layouts with Flexbox and Grid. | W1, W2 | X |  |  | X |
| 3. | Explains the basics of JavaScript as a tool for adding interactivity to web pages, covering DOM manipulation and event handling. | W3 | X |  |  | X |
| 4. | Introduction to frontend libraries and frameworks, presenting Bootstrap as an example of rapid interface design. | W4 | X |  |  | X |
| 5. | Introducing tools supporting frontend development, such as DevTools, and discussing methods for debugging and optimizing code. | W5 | X |  |  | X |
| 6. | Principles of designing aesthetic and functional user interfaces, the importance of ergonomics and clarity in design. | W1, W2 | X |  |  | X |
| 7. | Summary of classes and discussion of grades |  | X |  |  | X |

TYPE OF CLASS: LABORATORY

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| --- | --- | --- | --- | --- | --- | --- |
| No. | Content of the course | Reference to subject-specific learning outcomes | Method of implementation (mark "X") | | | |
| ST | | NST/ZD | |
| **Classes at the University** | **Activities on  the platform** | **Classes at the University** | **Activities on  the platform** |
| 1. | Introduction to front-end technologies, website structure, HTM L basics. | U1 | X |  |  | X |
| 2. | Styling websites with CSS, creating responsive layouts, introduction to Flexbox and Grid. | U2 | X |  |  | X |
| 3. | Basics of JavaScript programming, DOM manipulation, event handling. | U3 | X |  |  | X |
| 4. | Frontend frameworks and libraries, Bootstrap as a tool for rapid UI design. | U5 | X |  |  | X |
| 5. | Tools for frontend developers, code debugging with DevTools, optimization. | U4 | X |  |  | X |
| 6. | Individual project work, HTML, CSS and JavaScript integration | U3, K1, K2 | X |  |  | X |
| 7. | Summary of classes and discussion of grades |  | X |  |  | X |

3.5. Methods of verifying learning outcomes (indication and description of methods of conducting classes and verification of achievement of learning outcomes and method of documentation)

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| --- | --- | --- | --- |
| Subject Effects | Teaching methods | Methods of verifying learning outcomes | Documentation methods |
| KNOWLEDGE | | | |
| W1-W5 | Multimedia presentation | **Final Test:**  Students take a test consisting of theoretical questions on topics covered in lectures. The test includes:   1. Multiple choice questions (e.g. indicating the correct definition or principle of operation). 2. Descriptive questions (e.g. explaining the difference between Flexbox and Grid, describing the features of selected frontend technologies). 3. Code analysis tasks (e.g. identifying errors in HTML/CSS/JavaScript code and proposing fixes). | Test archived on the platform |
| SKILLS | | | |
| U1-U5 | Practical classes performed at computer stations | Individual Project:  Students are required to create a simple, responsive website that uses HTML, CSS, and JavaScript. The project should include an interactive element (e.g., form, dynamic layout) and be aesthetically designed. | Files archived on the platform |
| SOCIAL COMPETENCES | | | |
| K1-K2 | Practical classes performed at computer stations | Individual Project:  Students are required to create a simple, responsive website that uses HTML, CSS, and JavaScript. The project should include an interactive element (e.g., form, dynamic layout) and be aesthetically designed. | Files archived on the platform |

3.6. Assessment criteria for the achieved learning outcomes

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| Learning effect | For a grade of 3 or "pass."  the student knows and understands/is able to/is ready to | For a grade of 3.5, the student knows and understands/is able to/is ready to | For a grade of 4, the student knows and understands/is able to/is ready to | For a grade of 4.5, the student knows and understands/is able to/is ready to | For a grade of 5, the student knows and understands/is able to/is ready to |
| W | 51-60% of knowledge indicated in learning outcomes | 61-70% of knowledge indicated in learning outcomes | 71-80% of knowledge indicated in learning outcomes | 81-90% of knowledge indicated in learning outcomes | 91-100% of knowledge indicated in learning outcomes |
| U | 51-60% of skills indicated in learning outcomes | 61-70% of skills indicated in learning outcomes | 71-80% of skills indicated in learning outcomes | 81-90% of skills indicated in learning outcomes | 91-100% of skills indicated in learning outcomes |
| K | 51-60% of skills indicated in learning outcomes | 61-70% of skills indicated in learning outcomes | 71-80% of skills indicated in learning outcomes | 81-90% of skills indicated in learning outcomes | 91-100% of skills indicated in learning outcomes |

3.7. Literature

**Basic**

1. Sierra Kathy ; Bates Bert; Java; Helion; Gliwice 2011
2. David Flanagan, JavaScript. Przewodnik. Poznaj język mistrzów programowania, Helion, Gliwice, 2023
3. David DuRocher, HTML i CSS. Przewodnik dla początkujących, Helion, 2023

**Supplementary**

1. Sochacki Tomasz, JavaScript Techniki zaawansowane, Helion, Gliwice, 2022
2. Niederst Robbins Jennifer, Projektowanie stron internetowych. Przewodnik dla początkujących webmasterów po HTML5, CSS3 i grafice, Helion, Gliwice, 2022

4. Student workload - ECTS points balance

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| --- | --- | --- |
| **Types of student activity** | **Student Load** | |
| **ST** | **NST** |
| **Classes requiring direct contact between the student and the academic teacher at the university premises** | **50** | **25** |
| Classes included in the study plan | 50 | 25 |
| **Student's own work** | **50** | **75** |
| Ongoing preparation for classes, preparation of project work/presentations/etc. | 25 | 35 |
| Preparation for passing classes | 25 | 40 |
| **TOTAL STUDENT HOURLY LOAD** | **100** | **100** |
| **Number of ECTS points** | **4** | **4** |

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| Last change date | 30/09/2024 |
| The changes were introduced | INF Education Quality Team |
| The changes were approved | Arkadiusz Gwarda, M.A. |