University of Gdańsk

Subject card

Subject name and code	Front-end Frameworks, PG_00178061						
Field of study	Informatics and Econometrics						
Date of commencement of studies	October 2026		Academic year of realisation of subject		2027/2028		
Education level	Bachelor's studies		Subject group		Obligatory subject group in the field of study Optional subject group Subject group related to scientific research in the field of study		
Mode of study	full-time studies		Mode of delivery		at the university		
Year of study	2		Language of instruction		Polish		
Semester of study	4		ECTS credits		7.0		
Learning profile	academic		Assessment form		credit		
Conducting unit							
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Michał Kuciapski, prof. UG				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	60.0	0.0	0.0	75
	E-learning hours included: 0.0						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	Number of study hours	75		4.0		96.0	175
Subject objectives	• To learn about the design, programming and implementation of dynamic business websites based on popular front-end frameworks such as React and Vue. • Acquire skills in programming logic and creating highly interactive web applications using modern programming mechanisms available in front-end frameworks, such as binding, reactivity, dynamic styles, components, watch-e, enumerated fields, directives, routing, Single Page Application, global state management or scaling methods.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[IiEL3_U02] Can select or construct econometrics, informatics or statistics tools and apply them to describe and solve economic and social problems	is able to indicate the differences between key front-end frameworks, • designs modern business websites using the latest front-end framework mechanisms, designs scalable business websites through routing and state management mechanisms, is proficient in using front-end framework mechanisms to optimize the performance of web applications,	[SU2] presentation/project/paper/ report
	[IiEL3_U12] Can design and implement IT systems to enhance business operations and effectively utilize modern ICT technologies for management and business communication	is able to extend the business capabilities of websites with elements of interactivity and modularity available in front-end frameworks, implements solutions that take into account data access security mechanisms through authentication and authorization.	[SU2] presentation/project/paper/ report
	[IiEL3_W06] Knows and understands, to an advanced degree, the processes and methods of creating, developing, and providing appropriate conditions for using informatics or statistics tools, particularly those that improve human and organizational functioning	knows the syntax of key front-end frameworks for preparing fully functional web applications,	[SW2] presentation/project/paper/ report

Subject contents	Lecture 1. The Concept, Role, and History of Front-End Frameworks 2. Overview and Comparison of Front-End Visualization Frameworks 3. Overview and Comparison of Front-End Interaction Frameworks 4. Designing the Front-End Visualization Layer 5. Designing the Front-End Interaction Layer 6. Integrating the Front-End with the Backend Lab Exercises I. Vue 1. Concept 1.1. What is Vue.js? 1.2. Comparison with Other Libraries/Frameworks 1.3. Installing Vue.js 1.4. Dev Tools 1.5. Rendering 1.6. Lifecycle Diagram 2. API Options 2.1. Application Instance 2.2. Binding 2.3. Interpolations 2.4. Arguments 2.5. Directives (v-if, v-show, v-for) 2.6. Binding Styles (inline, classes) 2.7. Events handling 2.8. Shorthands 2.9. Computed properties 3. Composition API – Single Page Application 3.1. Creating project 3.2. Project structure 3.3. VSC and Vite configuration 3.4. Why composition API 3.5. Lifecycle 3.6. Application 3.7. Template syntax 3.8. Reactivity 3.9. Imports 3.10 Directives (v-if, v-show, v-for) 3.11. Binding styles (inline, classes, CSS) 3.12. Events handling 3.13. Shorthands 3.14. Computed properties 3.15. Watches (watch, watchEffect) 4. Single File Components: 4.1.1. Concept 4.1.2. Props 4.1.3. Emits 4.1.4. Slots 4.1.5. Styles 4.1.6. v-model 4.1.7. Teleport 4.1.8. Generic components 4.1.9. Async components 4.1.10. Typescript III. React 1. Concept 1.1. What is React 1.2. Virtual DOM 1.3. Data flow 1.4. Tools 1.5. Multiplatform 1.6. Useful libraries 2. Application development - basics 2.1. Creating app 2.2. Components 2.2.1. Basics 2.2.2. Types 2.2.3. Composing 2.2.4. JSX 3. Rendering 3.1.1. Binding 3.1.2. Conditional 3.1.3. Lists 3.1.4. Styling 4. State 4.1. Basics 4.2. Sharing data between components 4.3. Props 4.4. Patters 5.Lifecycle 6.Forms 7.Events

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<tr><td></td><td></td></tr>
<tr><td>Prerequisites and co-requisites</td><td>Introduction to Programming, Web Design</td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Final project</td><td>51.0%</td><td>100.0%</td></tr>
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</td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>• Mezzalira M. (2022), Front-End Reactive Architectures: Explore the Future of the Front-End using Reactive JavaScript Frameworks and Libraries, Apress
• Ribeiro H. (2022), Vue.js 3 Cookbook, Packt
• Griffiths David, Griffiths Dawn (2022) React. Receptury. Poradnik dla zaawansowanych, Helion</td></tr>
<tr><td>Supplementary literature</td><td>• Ribeiro H. (2022), Vue.js 3 Cookbook, Packt
• Porcello E., Banks A. (2021) React od podstaw. Nowoczesne wzorce tworzenia aplikacji, Helion</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>Design a business information portal using one of the popular front-end frameworks.</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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