

Lecture Plan

Modules

- Fundamentals of HTML/CSS
- Fundamentals of JavaScript
- Fundamentals of TypeScript
- Fundamentals of NodeJS (incl. Databases)
- Fundamentals of ReactJS
- Fundamentals of Agile/Project Management/Requirements gathering
- Practice with large-scale projects
- Final Project (~2 weeks)

Detailed schedule per module

Fundamentals of HTML/CSS (HTML1)

Lecture	In-Class
HTML-1	<ul style="list-style-type: none">• Administratori prisistatymas apie program.• Introduction to Lecturer• Introduction to Program• Introduction to Deliverables• Introduction to Teaching Methodology• Classroom introductions <p>Online:</p> <ul style="list-style-type: none">• Introduction to Online Lecturer• Introduction to Program• Introduction to Teaching Methodology• How does a computer work?• What are programming languages/how they work?
HTML-2	<ul style="list-style-type: none">• Introduction to different programming languages• Front-end vs Back-end• Detailed review of HTML/CSS/JS differences• Demo of HTML/CSS/JS in action, with student repeating all but JS• Delve into differences between HTML/CSS• Introduction to HTML• HTML structure (doctype to head to body)• Introduction to HTML syntax (incl. self-closing tags) and basic elements: h1-h6, p, img.• HTML/CSS comments;
HTML-3	<ul style="list-style-type: none">• Recap of HTML/CSS differences;• Recap of HTML structures;• HTML elements: block vs inline;• Core HTML elements: h1-h6, div, p, span, img, a.• Inline Internal External CSS;• CSS Syntax.• Simple CSS properties: color, background.
HTML-4	<ul style="list-style-type: none">• HTML: nesting elements;• HTML: ul/ol/li;• CSS: ID/Class;• Basic CSS selectors;• HTML: br/hr/strong (inline tipografija);• HTML: Box Model;• CSS: height/width, margin/padding/border.
HTML-5	<ul style="list-style-type: none">• HTML: div header/main/footer/section/nav;• CSS: px/em/rem, hex/rgb;• Text Encoding• CSS: font-size/weight;• CSS selectors: spaces, comma sep...• Reset/Normalize;

HTML-6	<ul style="list-style-type: none"> • HTML tables; • CSS selectors: first-child/last-child...
HTML-7	<ul style="list-style-type: none"> • HTML forms and validation. • CSS selectors: :hover, :active...
HTML-8	<ul style="list-style-type: none"> • Git + GitHub
HTML-9	Flexbox Fundamentals
HTML-10	Flexbox Advanced
HTML-11	Flexbox Advanced (2)
HTML-12	Grid CSS
HTML-13	Responsive Websites (Viewport, Media Queries)
HTML-14	Mobile-first Design
HTML-15	Responsive Practice
HTML-16	CSS Frameworks
HTML-17	CSS Preprocessors (spec. SCSS)
HTML-18	Front-End Test
HTML-19	Front-End Test

Fundamentals of JS

JS-1	<ul style="list-style-type: none"> • Introduction to Javascript and its possibilities; • Brief history of Javascript (and what is EcmaScript) • Variables • Data Types • Comments • Math Operators
JS-2	<ul style="list-style-type: none"> • Advanced Math Operators • if-else conditionals • alert()
JS-3	<ul style="list-style-type: none"> • Switch • Ternary Operator • Loops (For)
JS-4	<ul style="list-style-type: none"> • Loops (While...Do) • Loops (While) • What is DOM? • Basic DOM manipulation (textContent, innerHTML) • Selectors
JS-5	<ul style="list-style-type: none"> • Functions • addEventListener
JS-6	<ul style="list-style-type: none"> • Collecting data from user inputs (form submit event)
JS-7	<ul style="list-style-type: none"> • Anon Functions • Exc: Recap of getting and setting data with JS
JS-8	<ul style="list-style-type: none"> • Exc: Recap of getting and setting data with JS
JS-9	<ul style="list-style-type: none"> • Manipulating CSS with JS (object.style).
JS-10	<ul style="list-style-type: none"> • Recap of Data Types, more detail into Arrays, Objects. • Viewing DOM as an object - properties/methods. • Basic DOM properties: e.g. location, document.body, document.forms.
JS-11	<ul style="list-style-type: none"> • Creating DOM elements with createElement, append/prepend.

JS-12	<ul style="list-style-type: none"> • JS String, Number, Boolean methods
JS-13	<ul style="list-style-type: none"> • Review of what is callback? • JS callback array methods: forEach, map, filter, find, some, every
JS-14	<ul style="list-style-type: none"> • JS callback array methods: sort, reduce.
JS-15	<ul style="list-style-type: none"> • Recap of data type methods, practice.
JS-16	<ul style="list-style-type: none"> • Basics of creating objects, writing custom methods and calling them.
JS-17	<ul style="list-style-type: none"> • OOP pagrindai
JS-18	<ul style="list-style-type: none"> • Recap of Arrays, Objects. • Practice (exercises) of creating objects, arrays of objects.
JS-19	<ul style="list-style-type: none"> • Cookies • LocalStorage
JS-20	<ul style="list-style-type: none"> • Sync vs Async • Promises
JS-21	<ul style="list-style-type: none"> • REST API principles • Fetch GET
JS-22	<ul style="list-style-type: none"> • Fetch GET with Arrays and Objects
JS-23	<ul style="list-style-type: none"> • Fetch POST
JS-24	<ul style="list-style-type: none"> • Fetch GET and POST practice
JS-25	<ul style="list-style-type: none"> • Fetch DELETE and other REST methods.
JS-26	<ul style="list-style-type: none"> • Fetch Practice
JS-27	<ul style="list-style-type: none"> • JS Fetch methods with Postman
JS-28	<ul style="list-style-type: none"> • JS modules
JS-29	TEST
JS-30	TEST

TypeScript

Lecture	Topic
TS-1	<ul style="list-style-type: none"> • Introduction to TypeScript • TS Workflow (compiling) • Implicit and explicit type assignments • Functions • Going through and practicing different types
TS-2	<ul style="list-style-type: none"> • TS Classes • TS Namespaces
TS-3	<ul style="list-style-type: none"> • TS Interfaces • TS type decorators and enums
TS-4	<ul style="list-style-type: none"> • Simple TS exc and recap • Starting a Larger project with TS
TS-5	<ul style="list-style-type: none"> • Finishing Larger project with TS
TS-6	<ul style="list-style-type: none"> • TEST
TS-7	<ul style="list-style-type: none"> • TEST

NodeJS

Lecture	Topic
Node-1	<ul style="list-style-type: none"> • About NodeJS • Core of NPM • Exercises with simple JS code in NodeJS
Node-2	<ul style="list-style-type: none"> • HTTP requests • Express - NodeJS - GET • REST Principles • CORS
Node-3	<ul style="list-style-type: none"> • Express - NodeJS - POST • Front-end + Back-end REST in practice
Node-4	<ul style="list-style-type: none"> • Recap and practice of JS methods (filter, map, trim ir t.t.) • Dynamic Routing in Express
Node-5	<ul style="list-style-type: none"> • Principles of clean working practices with NodeJS: • Nodemon • Environemnts and dotenv • ESLint and Prettier
Node-6	<ul style="list-style-type: none"> • Brief to storage (databases, file systems); • In-depth view into databases (especially SQL vs noSQL); • A quick demo of what databases are good for; • Review of MongoDB (cluster database collection document); • Demo of how to register on http://mongodb.com and create a collection. • Homework on CAO: registering on http://mongodb.com and creating a cluster, downloading Compass and creating a database + collection + document. Playing around.
Node-7	<ul style="list-style-type: none"> • Using NodeJS to connect to MongoDB • Express GET to get array from MongoDB • Express POST to add a document fo MongoDB
Node-8	<ul style="list-style-type: none"> • Practice with GET/POST with MongoDB • Getting specific document with MongoDB (dynamic Express GET) • Learning to filter by criteria with MongoDB (Express GET)
Node-9	<ul style="list-style-type: none"> • Creating two collections in MongoDB and connecting them
Node-10	<ul style="list-style-type: none"> • Delete and Edit a document in MongoDB using Express
Node-11	<ul style="list-style-type: none"> • Practice with MongoDB GET/POST/DELETE (back-end + front-end)
Node-12	<ul style="list-style-type: none"> • Practice with MongoDB GET/POST/DELETE (back-end + front-end)
Node-13	<ul style="list-style-type: none"> • Introduction to SQL • Basic SQL syntax (SELECT, INSERT) • Create MySQL cluster on Digital Ocean and install MySQL client (use CREATE TABLE to create a table through the client)
Node-14	<ul style="list-style-type: none"> • Connecting NodeJS with the MySQL server • Express GET to get array from MySQL • Express POST to add a document fo MySQL
Node-15	<ul style="list-style-type: none"> • Express GET to get single item, filtered items from MySQL • Express POST to edit an item in MySQL • SQL injections and SQL escape • Express DELETE to remove a document from MySQL
Node-16	<ul style="list-style-type: none"> • Introduction to splitting files for a good NodeJS Express file structure. Minimum of creating "src" folder with two files 'server.js/index.js/app.js' and 'config.js', which will contain port and SQL data (from dotenv). • Practice with GET/POST/DELETE with MySQL
Node-17	<ul style="list-style-type: none"> • Practice with GET/POST/DELETE with MySQL
Node-18	<ul style="list-style-type: none"> • Relationships in SQL • SQL JOIN • Pratices with Express and multiple MySQL tables
Node-19	<ul style="list-style-type: none"> • Practice with MySQL GET/POST/DELETE (back-end + front-end), multiple tables

Node-20	<ul style="list-style-type: none"> Practice with MySQL GET/POST/DELETE (back-end + front-end), multiple tables (exc to be completed over two lessons)
Node-21	<ul style="list-style-type: none"> Practice with MySQL GET/POST/DELETE (back-end + front-end), multiple tables (exc to be completed over two lessons)
Node-22	<ul style="list-style-type: none"> Introduction to authentication Introduction to hashing Simple practice with MySQL: POST email/password (where password is hashed); GET to check if email/password is correct
Node-23	<ul style="list-style-type: none"> Introduction to JWT Full auth process: registration password hashing saving details in MySQL; login verifying details in MySQL generating JWT with information saving JWT in front-end (localStorage/cookies).
Node-24	<ul style="list-style-type: none"> Practice with authentication and getting public/private information
Node-25	<ul style="list-style-type: none"> Exercise over two days: auth + GET/POST/DELETE using multiple MySQL tables
Node-26	<ul style="list-style-type: none"> Exercise over two days: auth + GET/POST/DELETE using multiple MySQL tables
Node-27	<ul style="list-style-type: none"> Adding External APIs
Node-28	<ul style="list-style-type: none"> Reminder of REST NodeJS delivery and server-side rendering of front-end Looking at templating engines
Node-29	<ul style="list-style-type: none"> Practice with EJS
Node-30	<ul style="list-style-type: none"> Principles of MVC using EJS
Node-31	<ul style="list-style-type: none"> TEST (REST project)
Node-32	<ul style="list-style-type: none"> TEST (REST project)

ReactJS

Teaching is completed with function-based React components.

Lecture	Topic
React-1	<ul style="list-style-type: none"> Introduction to JS frameworks/libraries Introduction to ReactJS and its file structure Introduction to JSX and exc with it
React-2	<ul style="list-style-type: none"> Introduction to components and exc with it Introduction to props and exc with it
React-3	<ul style="list-style-type: none"> Advanced JSX: Conditional Rendering Lists
React-4	<ul style="list-style-type: none"> Introduction to state management Lifecycles React Hooks
React-5	<ul style="list-style-type: none"> Handling events Form events Continue work with React hooks
React-6	<ul style="list-style-type: none"> React Router React structure: views/components organisms molecules atoms.
React-7	<ul style="list-style-type: none"> Styling options in React Styled Components
React-8	<ul style="list-style-type: none"> Recap of ReactJS fundamentals
React-9	<ul style="list-style-type: none"> Recap of ReactJS fundamentals
React-10	<ul style="list-style-type: none"> Context/Reducers State Management Fundamentals

React-11	<ul style="list-style-type: none">• Storybook
React-12	<ul style="list-style-type: none">• React Testing Basics
React-13	<ul style="list-style-type: none">• Practice of project with auth
React-14	<ul style="list-style-type: none">• Practice: React + Node Project
React-15	<ul style="list-style-type: none">• Practice: React + Node Project
React-16	<ul style="list-style-type: none">• React components in classes
React-17	<ul style="list-style-type: none">• TEST
React-18	<ul style="list-style-type: none">• TEST

Additional topics, depending on delivery timeline, may include:

- Digital Marketing / SEO;
- Project Management Fundamentals;
- DevOps;
- Containerization;
- Cloud;
- GraphQL.