Course syllabus

Webbprogrammering
Web Programming

EDAF90, 7,5 credits, G2 (First Cycle)

Valid for: 2023/24
Faculty: Faculty of Engineering, LTH
Decided by: PLED C/D
Date of Decision: 2023-04-18

General Information

Main field: Technology.
Compulsory for: C3
Elective for: BME4, D4, E4, F4, I4, L4-gi
Language of instruction: The course will be given in Swedish

Aim

The course gives basic knowledge on techniques and technologies for web programming. The course content include communication (http), programing language (JavaScript) and execution environment (DOM JavaScript runtime). Students will also get experience of single threaded asynchronous programming. After the course, the students have enough knowledge and skills to develop their own web applications. This course focus on the client side.

Learning outcomes

Knowledge and understanding
For a passing grade the student must

- have knowledge on protocols relevant to web applications, e.g. http
- have thorough knowledge of the programming language JavaScript, i.e. prototype based inheritance and functional scope
- have an understanding of a webpage's structure, how it is represented in browsers, and how JavaScript is executed and interacting with the DOM (browser as execution platform).
- have an understanding of the possibilities and limitations of single threaded asynchronous runtime systems

- have knowledge of data storing techniques in a web applications (such as cookies, http session, HTML5 local store, and server-side database)
- be able to problematize about component state in presence of asynchronous events and browser navigation (e.g. direct links, stepping backwards in the browser history), and know techniques to handle these problems, such as redux.
- have an understanding of the principles of restful-api

Competences and skills
For a passing grade the student must

- be able to utilize asynchronous programming techniques to create user-friendly / responsive web applications
- be able to develop simple web applications using component-based frameworks such as React, Vue, or Angular
- be able to use framework for layout, e.g. bootstrap or material design, to create a modern and uniform look on web applications

Contents

HTML, CSS, DOM, JavaScript (prototype based object orientation, functional scope), asynchronous programming (promise, rxjs), race conditions and deadlock, storing data in web applications (cookies, http-session, HTML5 local store, server side databases), http-protocol, XMLHttpRequest, data representation (character encoding, base64, json), restful-api, introduction to current frameworks for web application development (i.e. bootstrap, React, Vue or Angular), introduction to language extensions and transpilers, i.e. scss and typescript, backwards compatibility and polyfill.

Examination details

Grading scale: TH - (U,3,4,5) - (Fail, Three, Four, Five)
Assessment: There will be a written examination. Participation in the project requires that the laboratory exercises scheduled earlier than 7 days before the start date of the project are passed. Participation in the examination requires that all the laboratory exercises have been performed. In order to pass the course, the student must also pass the project. The final grade of the course is based on the result of the written examination.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

Parts
Code: 0118. **Name:** Written Examination in Web Programming.
Credits: 3. **Grading scale:** TH. **Assessment:** Written examination.
Code: 0218. **Name:** Compulsory Course Items.
Credits: 4,5. **Grading scale:** UG. **Assessment:** For a passing grade the compulsory laboratory exercises and the project must be completed. **Contents:** Compulsory laboratory exercises and a compulsory project.

Admission

Admission requirements:

- EDAA01 Programming - Second Course or EDAA30 Programming in Java - Second Course

The number of participants is limited to: No

Contact and other information

Course coordinator: Per Andersson, Per.Andersson@cs.lth.se