COURSE SYLLABUS

Web Development - Advanced Concepts, 7.5 credits

Fördjupad webbutveckling, 7,5 högskolepoäng

Course Code:	TFWN14	**Education Cycle:**	First-cycle level
Confirmed by:	Dean Mar 1, 2023	**Disciplinary domain:**	Technology
Valid From:	Aug 1, 2024	**Subject group:**	DT1
Version:	1	**Specialised in:**	G2F
		Main field of study:	Computer Engineering, Informatics

Intended Learning Outcomes (ILO)

After a successful course, the student shall

Knowledge and understanding
- demonstrate comprehension of the need for, and the use of, Content Delivery Networks
- demonstrate comprehension of the challenges inherent in and technologies used for the construction of scalable web applications (NoSQL databases, horisontal scaling with session management, data partitioning and sharding, etc)

Skills and abilities
- demonstrate the ability to use JavaScript to manipulate a web page's Document Object Model
- demonstrate skills of programming against commonly used JavaScript libraries
- demonstrate the ability to construct web pages that interact with other web systems using REST/JSON, OAuth, etc.
- demonstrate the ability to use advanced web client APIs, such as web storage, web workers, web components, WebAssembly, etc.
- demonstrate the ability to configure and use containers for development, testing, and deployment environments

Judgement and approach
- demonstrate the ability to evaluate the security of web applications.

Contents

The course aims to convey advanced web programming concepts and techniques. The course starts with how to use JavaScript and the Document Object Model to directly modify a web page's content and looks on the client side. This portion also covers certain key client side libraries and APIs. The course then focuses on the server side, specifically using Node.js and associated frameworks, teaching the student how to construct scalable database-backed back end solutions, which communicate with front end web pages using REST APIs. The security perspective is discussed throughout the course, on both client- and server-side. Additionally, the course emphasizes maintainable program structure and the use of containers to support development,

testing, and deployment of web applications.

The course includes the following topics:
- Document Object Model
- Client APIs and libraries
- Architecture and REST APIs
- Containers for web development
- Back ends in Node.js
- Security of web applications, in particular authentication and authorisation
- Calling other web services

Type of instruction

Lectures, laboratory sessions and project work.

The teaching is conducted in English.

Prerequisites

General entry requirements and taken courses 60 credits in first cycle, including Web Development Fundamentals, 7,5 credits (or the equivalent).

Examination and grades

The course is graded 5,4,3 or Fail.

The final grade for the course is based on a balanced set of assessments. The final grade will only be issued after satisfactory completion of all assessments.

Registration of examination:

Name of the Test	Value	Grading
Project	4 credits	5/4/3/U
Examination	2.5 credits	5/4/3/U
Assignment	1 credit	U/G

Course literature

Literature

The litterature list for the course will be provided 8 weeks before the course starts.

Titel: Eloquent JavaScript - A Modern Introduction to Programming
Upplaga (2018)
Författare: Marijn Haverbeke.
Förlag: No Starch Press
ISBN: 978-1-593-27950-9
Web: eloquentjavascript.net