

Web Technologies (E755080)

Course size *(nominal values; actual values may depend on programme)*

Credits 3.0 **Study time 90 h**

Course offerings and teaching methods in academic year 2023-2024

A (semester 1)	Dutch	Gent	lecture seminar
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Lecturers in academic year 2023-2024

Ongenaë, Veerle	TW05	lecturer-in-charge
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Offered in the following programmes in 2023-2024

	crdts	offering
Master of Science in Electrical Engineering Technology(main subject Automation)	3	A
Master of Science in Electrical Engineering Technology(main subject Electrical Engineering)	3	A

Teaching languages

Dutch

Keywords

Web applications, .NET platform, REST, AJAX, ORM, Entity Framework, javascript, HTML, websockets, MQTT, node-red

Position of the course

The objective of this course is to learn the basic principles of the architecture, the operation and the development of a web application.

Contents

- Communication with the server: the fundamentals of the HTTP protocol and the structure of HTTP messages
- Develop web pages
- Reacting to user input: events, eventhandlers, observer pattern
- Communication with the backend
- REST API and web services: concepts and operation
- ORM: concepts, basic principles and working
- Two way communication between client and server
- Messaging

Technologies

Technologies used: HTML5, ECMAScript (javascript), AJAX, Web API, Entity Framework (.NET), websockets, MQTT, node-red

Initial competences

The following competences must be acquired in advance, for example by passing the course 'Object-oriented programming in C#':

- Object oriented programming in C#
- Communication with a database in a C# program (ADO.NET)

Final competences

- 1 Develop a REST web service in Web API
- 2 Develop dynamic web pages.
- 3 Explain and illustrate the basics of ORM through an example and implement a data layer using the Entity framework.
- 4 Explain and implement the basic principles of two-way communication and messaging in an application.

Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Seminar, Lecture

Extra information on the teaching methods

During the lectures, the theory is explained step by step, partly on the basis of examples.
During the labs, the student works independently on a PC or laptop.

Learning materials and price

Slides and examples are available on the electronic learning environment. The following software is used: Visual Studio 2022

References

- 1 Advanced Game Design with HTML5 and JavaScript, Rex van der Spuy, Apress, 2015
- 2 Pro HTML5 with CSS, JavaScript, and Multimedia Complete Website Development and Best Practices, Apress, 2017
- 3 Head First JavaScript Programming, Eric T. Freeman, Elisabeth Robson, O'ReillyMedia, 2014
- 4 Javascript Tutorials, <https://developer.mozilla.org/nl/docs/Web/JavaScript>
- 5 Create a web API with ASP.NET Core, <https://docs.microsoft.com/en-us/aspnet/core/tutorials/first-web-api>
- 6 ASP.NET documentation, <https://docs.microsoft.com/en-us/aspnet/core/>
- 7 Entity Framework Core, <https://docs.microsoft.com/en-us/ef/core/>

Course content-related study coaching

Teachers are available for extra explanation during the labs, before or after the theory lessons and possibly at other times by appointment

Assessment moments

end-of-term assessment

Examination methods in case of periodic assessment during the first examination period

Skills test, Written assessment

Examination methods in case of periodic assessment during the second examination period

Skills test, Written assessment

Possibilities of retake in case of permanent assessment

not applicable

Extra information on the examination methods

The exam consists of two parts: a written part on paper and exercises on the computer. The exercises on the computer are open book.

Calculation of the examination mark

written exam (50%); exercises on the computer (50%)