

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

Credits	6.0	Study time	180 h	Contact hrs	60.0 h
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Course offerings and teaching methods in academic year 2020-2021

A (semester 2)	Dutch	lecture	30.0 h
		practicum	30.0 h

Lecturers in academic year 2020-2021

Verborgh, Ruben	TW06	lecturer-in-charge
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Offered in the following programmes in 2020-2021

<a href="#">Bachelor of Science in Computer Science</a>	crdts	offering
	6	A

Teaching languages

Dutch

Keywords

Web, Web technology, Web applications, HTTP, URL, Web APIs, REST, Semantic Web, Linked Data, RDF, SPARQL, open data, decentralization, standardization

Position of the course

Through this course, students learn the **basic principles and architecture of the Web**, and they study the impact of design decisions on a low level on Web applications at a large scale. In addition to these transferrable skills, they gain experience with **current Web technologies and infrastructure**. We embed these technologies in the broader socio-economic reality, and study scientific literature that enables progress in this domain.

Contents

- 1 Architecture, protocols, and standards of the Web
- 2 Design and implementation of Web APIs
- 3 The Semantic Web and Linked Data
- 4 Scalable data publication on the Web
- 5 Decentralization
- 6 Concrete Web applications and case studies

Initial competences

- creating a basic webpage using HTML and CSS
- programming in JavaScript
- understanding how TCP/IP and DNS work

Final competences

- 1 Understanding the architecture of the Web.
- 2 Understanding the mechanisms of HTTP.
- 3 Looking up Web standards and applying them.
- 4 Building a dynamic Web application.
- 5 Deploying a Web application to a server.
- 6 Applying the basic principles of Web APIs.
- 7 Implementing a Web API.
- 8 Consuming a Web API.
- 9 Argue the necessity of semantics in data and metadata.
- 10 Applying the basic technologies of the Semantic Web.
- 11 Publishing machine-interpretable data on the Web.
- 12 Designing and building decentral applications.
- 13 Positioning the Web's societal role and technological contribution.
- 14 Critically processing scholarly communication on Web technology.

#### 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

Lecture, practicum, self-reliant study activities

#### Learning materials and price

- interactive Web slides with discussion opportunities
- additional slides through the learning platform
- selection of scholarly articles

#### References

#### Course content-related study coaching

- contact with the lecturers (through email and in person after appointment)
- supervised labs

#### Evaluation methods

end-of-term evaluation and continuous assessment

#### Examination methods in case of periodic evaluation during the first examination period

Open book examination, oral examination

#### Examination methods in case of periodic evaluation during the second examination period

Open book examination, oral examination

#### Examination methods in case of permanent evaluation

Assignment, peer assessment, report

#### Possibilities of retake in case of permanent evaluation

examination during the second examination period is possible in modified form

#### Extra information on the examination methods

- **Non-periodical evaluation**
  - labs in groups
- **Periodical evaluation**
  - oral examination
  - written preparation
  - open book and open Web

#### Calculation of the examination mark

The labs and the examination are graded independently on an equal scale. If both scores are at least 40%, the final grade is the average of both. Otherwise, it is the lowest of both.

For the labs, students will be graded per group, but given timely notification of an unfair division of effort, the responsible lecturer can decide to assign individual grades.

Missing a deadline is considered a non-submission.

In case a lab score of less than 50% is obtained during the first exam period, students can request an individual assignment for the second exam period.

#### Facilities for Working Students

Possibility to perform an individualized version of the practical sessions, given a timely notification at the start of the semester.