GHENT UNIVERSITY

Course Specifications

Valid as from the academic year 2020-2021

User Interfaces (E761036)

Due to Covid 19, the education and evaluation methods may vary from the information displayed in the schedules and course details. Any changes will be communicated on Ufora.

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

Credits	Study time	Contact hrs
6.0	180 h	60.0 h

Course offerings and teaching methods in academic year 2020-2021

A (semester 2)	Dutch	Gent	seminar: practical PC room classes	36.0 h
			lecture	24.0 h

Lecturers in academic year 2020-2021

Ongenae, Veerle	TW05	lecturer-in-charge

Offered in the following programmes in 2020-2021	crdts	offering
Bachelor of Science in Engineering Technology (main subject Information Engineering Technology)	6	A
Master of Science in Electrical Engineering Technology (main subject Automation)	6	A
Linking Course Master of Science in Information Engineering Technology	6	A
Preparatory Course Master of Science in Information Engineering Technology	6	A

Teaching languages

Dutch

Keywords

User interfaces, web applications, mobile apps, responsive design, javascript frameworks, HTML5, Computer science (P170), Informatics (P175), Computer technology (T120)

Position of the course

This course provides students with a broad technological insight in the structure, operation and implementation of user interfaces. The emphasis here is on so-called clientside frameworks, both web-based and mobile platforms.

Contents

In this course the following concepts are discussed:
• The difference between the development and implementation of native, hybrid and web apps
• Structural elements of a user interface: widgets in a tree structure
• Building a user interface in a declarative way: method and benefits
• Responsive design
• Responding to user input: event mechanism, observer pattern (listeners)
• Architectural patterns for user interfaces: MVC, MVP, MVVM
• Data binding: one-way and two-way
• Background processes and multithreading: eventloop
• Reactive programming
• Communication with the back-end
• Forward, upward and backward navigation
• Sensor programming: framework, types of sensors, attention points
Technologies that are covered: HTML5, ECMAscript (javascript), CSS, Angular, React, Android, JSON, AJAX.

Initial competences

The following competencies must be acquired in advance, for example by having passed the Object Oriented programming course:
• Being able to program in an object oriented way on an advanced level (in Java)

Final competences

1 making a well-founded choice between web-based or "native" programming languages for a specific application
2 build a high-performance and smooth UI application
3 gain insight and knowledge of the functioning of the most important UI frameworks
4 Understand the architectural patterns for graphical frontend applications

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, seminar: practical PC room classes

Extra information on the teaching methods

- Lectures (24 hrs)
- Labs (36 hrs): individual work on PC

Learning materials and price

Slides and examples are available on the electronica learning platform. Software used: IntelliJ, Webstorms, Android Studio

References

- Android Programming. B. Phillips and B. Hardy. The Big Nerd Ranch Guide. 4th edition, 2019
- "Advanced Game Design with HTML5 and JavaScript", Rex van der Spuy, Apress, 2015
- "Pro Angular", Adam Freeman, Marc J. Collins, Apress, 2017
- "Pro HTML5 with CSS, JavaScript, and Multimedia Complete Website Development and Best Practices", Apress, 2017
- "Pro PHP and jQuery", Jason Lengstorf, Apress, 2010
- "Head First JavaScript Programming", Eric T. Freeman, Elisabeth Robson, O'Reilly Media, 2014

Course content-related study coaching

The student can always make an appointment with the teachers.

Evaluation methods

end-of-term evaluation and continuous assessment

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

Written examination, skills test

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

Written examination, skills test

Examination methods in case of permanent evaluation

Skills test

Possibilities of retake in case of permanent evaluation

examination during the second examination period is not possible

Extra information on the examination methods

- Periodegebonden Evaluatie: written theory exam + practical exam in PC lab
- Vaardigheidstest: test on PC

Calculation of the examination mark

PE 75% (written theory exam (50%) + practical exam in PC lab (25%))
NPE 25% (test)
During the second exam chance the points of the NPE disappear and only the points obtained on the written exam (50%) and an exercise on the computer (50%) count.