User Interfaces (E761036)

Valid as from the academic year 2019-2020

Course Specifications

Lecturers in academic year 2019-2020

Ongenae, Veerle
TW05 lecturer-in-charge

Course offerings and teaching methods in academic year 2019-2020

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

Offered in the following programmes in 2019-2020

Bachelor of Science in Engineering Technology (main subject Information Engineering Technology)
Master of Science in Electrical Engineering Technology (main subject Automation)

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, CSS, jQuery, 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

(APPROVED)
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 on the electronica learning platform

References
- "Advanced Game Design with HTML5 and JavaScript", Rex van der Spuy, Apress, 2015
- "Pro Angular", Adam Freeman, Marc J. Collins, 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.