



## COURSE SYLLABUS

# Development for Mobile, Wearable and Smart Devices, 7.5 credits

*Development for Mobile, Wearable and Smart Devices, 7,5 högskolepoäng*

---

|                                       |  |
|---------------------------------------|--|
| <b>Course Code:</b> TDWR29            | <b>Education Cycle:</b> Second-cycle level |
| <b>Confirmed by:</b> Dean Jun 1, 2019 | <b>Disciplinary domain:</b> Technology     |
| <b>Valid From:</b> Aug 1, 2019        | <b>Subject group:</b> DT1                  |
| <b>Version:</b> 1                     | <b>Specialised in:</b> A1N                 |
|                                       | <b>Main field of study:</b> Informatics    |

---

### Intended Learning Outcomes (ILO)

After a successful course, the student shall

Knowledge and understanding

- demonstrate comprehension of user experience design for mobile, wearable and smart devices
- display knowledge of principles of development of cross-platform applications for mobile devices
- show familiarity with the Internet of Things – the technology of connected devices – and user experience design for it

Skills and abilities

- demonstrate skills of object-oriented programming in a scripting language
- demonstrate skills of creating high-fidelity prototypes and wire-frames for mobile devices
- demonstrate the ability to create a cross-platform mobile application

Judgement and approach

- demonstrate the ability to choose an appropriate design of user experience based on the type of a device

### Contents

The course continues the subject of user experience design by first focusing on high-fidelity prototypes and wire-frames for mobile and wearable devices. After introducing the technology of connected devices, the focus shifts to the design for smart devices, and cross-device interactions. The development part starts with the recapitulation of object-oriented programming in JavaScript. Cross-platform development of mobile applications is introduced next with the help of mobile application frameworks and libraries such as PhoneGap and Parse. It includes building a mobile application being able to manage user accounts, store data, and use different services provided by the mobile device platform.

The topics covered in the course include:

- user experience design for mobile, wearable and smart devices
- high-fidelity prototypes and wire-frames
- IoT (Internet of Things) – the technology of connected devices
- embedded device design
- user experience design for connected products and cross-device interactions
- object-oriented programming in JavaScript, UML class and sequence diagrams
- cross-platform development of mobile applications with HTML, JavaScript, and CSS
- mobile application frameworks with Foreign Function Interface (FFI)
- building a CRUD Application (Create-Read-Update-Delete)
- integrating applications with social web APIs
- location detection, camera access and user management

### Type of instruction

The course consists of lectures and laboratory work.

The teaching is conducted in English.

### Prerequisites

The applicant must hold the minimum of a bachelor's degree (i.e the equivalent of 180 ECTS credits at an accredited university) with at least 90 credits in computer engineering, electrical engineering (with relevant courses in computer engineering), or equivalent. The bachelor's degree should comprise a minimum of 15 credits in mathematics. Proof of English proficiency is required.

### Examination and grades

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

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

Registration of examination:

| Name of the Test | Value       | Grading |
|------------------|-------------|---------|
| Project work     | 4 credits   | 5/4/3/U |
| Laboratory work  | 3.5 credits | 5/4/3/U |

### Course literature

Literature

Author: Stephan Alber

Title: Beginning App Development with Parse and Phonegap

Publisher: APress, 2015

Title: Designing Connected Products: UX for the Consumer Internet of Things

Author: Claire Rowland, Elizabeth Goodman, Martin Charlier

Publisher: O'Reilly Media, 2015

The literature list for the course will be provided one month before the course starts.