

SPECIALISATIONS catalogue

**Erhvervsakademi Dania
Viborg 2016**

IT teknologi



2016

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1 Course descriptions

The tests in the selected courses must be passed before the student can take the final test on 4th semester.

1.1 *Android Programming (5 ECTS)*

Contents:

This module will give an insight into programming for network enabled mobile devices. It will provide information on the two main infrastructures current present in the market (Apple and Android), comparing and contrasting the associated approaches, benefits and disadvantages.

The programming element of the course will focus on the current market leader (Android), through graduated exercises and examples, covering programming on the Android platform, and also programming and configuration of server-side web services and associated databases to support the Android apps.

The software development process will be made realistic, in relation to current industry best practice, through use of UML documentation and configuration control using Git.

Knowledge:

- Key features of Apple and Android's development programs and infrastructure.
- Comparison of Apple and Android technical approaches, including coverage of programming languages (Swift and Java) and Design Patterns, such as Model View Controller (MVC)
- Use of Unified Modeling Language (UML) to document requirements, software and system design.
- Specifics of Android Studio IDE, including Maven and Gradle build system

Skills:

- Developing standalone and network enabled Android apps using appropriate tools such as Android Studio.
- Documenting requirements and design of Android apps, using UML
- Configuration, programming and maintenance of server applications and databases, to support network enabled Android apps
- Management of complex systems development scenarios, including use of configuration management tools

Competences:

- Analysis and determination of relevant technologies for development of mobile applications
- Analysis and design of mobile applications, in relation to user requirements

Assessment of the module:

To pass this course, the students must individually prepare and present a project about a small case given during the course. The presentation is mandatory. It takes place in the final session of the course. The assessment grading is according to the 7-step grading scale.

1.2 Advanced Linux (5 ECTS)

Contents:

The aim of this course is to introduce the students to some of the advanced concepts related to Linux and Linux servers. By taking this course, the students will learn how to set up and maintain a variety of servers (web, FTP, proxy, DNS, firewall, DHCP), based on Linux. Furthermore, the course will focus on advanced use of the Linux shell, such as writing scripts, making efficient processing of text files (e.g. logs and configuration files), and using cron jobs to automate administrative tasks.

Knowledge:

- Installation and maintenance of Linux servers, e.g. based on Ubuntu Linux
- Command expansion and environment variables
- Shell scripts
- Regular expressions
- Text processing with sed and awk
- Cron jobs Skills The student is able to:

Skills:

- Set up and maintain a general Linux based server, or a one for a specific purpose, such as FTP, web, DNS etc.
- Use advanced features of the Linux command line.
- Write and use shell scripts for automation of tasks.
- Use regular expressions to search for patterns in text.
- Run administrative tasks automatically at specific times.
- Configuration of Linux servers

Competences:

- Carry out common system administration tasks on Linux-based systems.
- Make scripts for simplifying complex tasks.
- Automate tasks on a Linux system.
- Work efficiently with text files.

Assesment of this module:

To pass this course, the students must individually prepare and present a project about a small case given during the course. The presentation is mandatory. It takes place in the final session of the course. The assessment grading is according to the 7-step grading scale.

1.3 Smart Grid (5 ECTS)

Contents:

To provide the student with an insight into network and IT technology within the area of Smart Grid, which is expected to be one of its major application areas in the coming two decades. The subject is approached from a customer/user, a design, and an implementation point-of-view. Thereby, the student gets a solid background for working within this area.

Knowledge:

- Understanding and knowledge about future smart grid systems.
- Knowledge of RF based networking systems (ZigBee, Bluetooth, 802.11 WiFi).
- Understanding of network gateways and the reasons for using gateway systems.
- Knowledge about standardisation of smart grid technology, and its importance.

Skills:

- Production of structure requirements documentation using UML.
- Independent analysis, design, and documentation of systems and system interfaces.
- Evaluation of standardization initiatives within the smart grid field.

Competences

- Configuration and setup of Linux on the Raspberry Pi platform (Raspbian)
- Configuration and setup of a ZigBee radio network.
- Python/PHP programming under Linux.
- Arduino programming.

Assessment of this module:

To pass this course, the students must individually prepare and present a project about a small case given during the course. The case should demonstrate knowledge, vision and understanding of a system or subsystem in the SmartGrid technology universe. Illustrated through usage of the Ardurino or Raspberry Pi systems.

The presentation is mandatory. It takes place in the final session of the course. Each group is to present their project, and each group member is to present a sub part of the project. The assessment is given according to the 7-step grading scale.

1.4 Network fault finding and Wireshark (5 ECTS)

Contents:

The objective is for the student to acquire new knowledge and skills network build up and fault finding. Such as building up a minor network with EIGRP/OSPF/RIPv2 and subsequently finding and correcting faults found within the given networks.

Knowledge:

- Fault finding theory

Skills:

- Configuration of minor network setup with real equipment – up to 3 routers.
- Identification of common network errors.
- Usage of Wireshark for network monitoring

Competencies:

- Setup of OSPF,EIGRP,RIPv2 networks
- Identification of errors in networks and fault finding.

Assessment of this module:

To pass this course, the students must individually prepare and present a project about a small case given during the course. The presentation is mandatory. It takes place in the final session of the course. The assessment is given according to the 7-step grading scale.