Institution: Turku University of Applied Sciences

Specialization: Embedded Software

Aim of the course: The course contains exercises on microcontroller programming with C & ASM, multithreaded programming with interrupts and RTOS, HW simulation and program testing in workstation environment, system modelling methods and CASE tools for embedded design, digital signal processing mathematics and concepts, digital filtering and DSP applications of speech and video processing. The course is practically oriented and has plenty of laboratory hands-on study. Close contacts to the local industry are maintained during the course: industry representants lecture on special subjects and several companies are visited. The language is English.

The course can be taken in the 3rd year of a 4 years course with an embedded project work (10 ECTS) or in the last year of a course with a Bachelor thesis (15 ECTS) instead. In the second case one other module can be dropped.

To get the Finnish diploma a student must have 240 ECTS. In case a student wants to stay a 2nd year in Finland not all courses can be guaranteed to be taught in English.

Embedded Software 1		
Course topics are microcontroller programming in C language, multitasking and real-time architectures for microcontrollers, software simulation and testing methods in workstation environment, structured analysis, real-time system modeling and simulation.		
Examination: written, project work		
15 ECTS	8 hours/week	1 + 2 semester

Digital Signal Processing		
After this course student is familiar with basic concepts of DSP such as properties of discrete signals, analog-digital digital-analog conversions and FIR and IIR filters. Students are also able to implement basic digital filters using Matlab.		
Examination: written, project work		
5 ECTS	5 hours/week	1 semester

Digital Electronics		
The course concentrates on learning basics of combination and sequence circuit planning and execution using ordinary random logic and simple programmable logic circuits.		
Examination: written		
5 ECTS	4 hours/week	1 semester

CCNA 1		
CCNA 1 presents the main network structures, IP addressing, cabling systems and management.		
Examination: written		
4 ECTS	4 hours/week	1 semester

Finnish for Foreigners		
This course is aimed for the exchange students. The course is a fun way to get to know Finnish language and Finnish everyday life. After the course the student understands basic structures of the Finnish language and is able to cope in everyday situations.		
Examination: written		
3 ECTS	3 hours/week	1 semester

Get Finternational		
Aim of the course is to give students a wider perspective into the Finnish society, taking part in it more actively, learning how to analyze the adaptation to a foreign culture, learning how to interact with the representatives of different cultures. This course brings together both Finnish and foreign students.		
Examination: project work		
3 ECTS	3 hours/week	1 semester

Embedded Linux		
Linux has become very popular OS solution for embedded systems. This course focuses on the development of (kernel-side) device drivers for an embedded platform. The course is implemented as a series of hand-on laboratory works, where the students become familiar with typical development setup consisting of workstation and target system.		
Examination: project work		
3 ECTS	4 hours/week	2 semester

CCNA 2		
CCNA2 goes into network models and describes the main features of routing technology and router configurations.		
Examination: written		
4 ECTS	4 hours/week	2 semester

CCNA 3		
CCNA 3 goes through modern switched LAN-networks, protocols and VLANs.		
Examination: written		
4 ECTS	4 hours/week	2 semester

CCNA 4		
CCNA 4 handles WAN-technologies and protocols and network management.		
Examination: written		
4 ECTS	4 hours/week	2 semester

Embedded Project work / Bachelor Thesis		
The main goal of the course is to get the student familiar with result-oriented research and development project work. The subject area of the project will support and deepen the topics studied in embedded software option. The detailed objectives and contents of the course will be defined on a project basis.		
Examination: project work / Bachelor thesis		
10 ECTS for project 15 ECTS for thesis	8 hours/week	2 semester

Range of the marks

5: excellent
4: very good
3: good
2: satisfactory
1: sufficient
0 : not passed