

No. crt.	Subject	Requirements	Description	Project's profile
1	Distribution Point management reporting system	Computers & Information Technology Faculty Active LAN equipments SQL language HTML, ASP Oracle or SQL databases (not MySQL)	IE based reporting system for DP racks, switches, ports, outlets, connected equipments management. Oracle or SQL database.	Networking (CISCO)
2	Mobile data aquisition system	Computers & Information Technology Faculty VB.NET WM5 or later Oracle databases	Application for Motorola Symbol MC9090G WLAN scanners with WM5.0 used for barcode reading and decoding. Data transmission to a database.	SW
3	BMW Radio BC	Technical Faculty or Informatics Year of study >= 3 C knowledge Advanced English	Documentation update, perform module tests (on target and with RTRT).	SW
4	MIB E BC – support for pre integration team	Technical Faculty or Computer science from University Year of study >= 2 MS Office Basic electronic knowhow	Update SW test cases based on requirements documents. Perform tests on SW for different variants. Perform automatic tests.	TESTING

No. crt.	Subject	Requirements	Description	Project's profile
5	Waveform editor for Power Supplies and signal generators	Automatics and Computer Science or Informatics Faculty Year of study 2-4 Visual C++ or C# – multiple documents & dialog based user interface design	<p>In our daily work we need to inject in our Airbag Control Units different Voltage waveforms. Doing this manually takes a lot of time and it is different from 1 model of Power Supply to another. To make it easier we want to develop a PC application where we can define the waveform and afterwards to download it to the desired Power Supply.</p> <p>The application should be developed in Visual C++ (MFC or .NET) or C# and should consist in the following modules:</p> <ul style="list-style-type: none"> - user interface to edit waveforms; - communication with different power supply models. 	SW
6	Visual Basic Application for object reviews generation & tracking	AC Informatics (UPT) Informatics (UVT)	<p>An application which integrate the code from 3 applications in order to:</p> <ul style="list-style-type: none"> - allocate review numbers based on the information required to be introduced in a form; - create a directory with a required name which is generated from the information introduced at the previous requirement; - generate a word file with same name as the previously mentioned directory, containing information introduced in the form created in the first step; - send a Lotus invitation created based on information introduced in a new form; - create a consolidated word file with information from all word files from the created directory (point 2); - maintain a status with all reviews for a project. <p>The application shall be used by persons from different location working on a project. The settings for the application shall be made on each project at the beginning of the project.</p>	SW

No. crt.	Subject	Requirements	Description	Project's profile
7	Environment for handling MHX files	Computer Science Min. year 2 of study Basic knowledge of computers architecture and C/C++ programming	We need to create an environment used to handle and modify downloadable files of type MHX. This program should be able to modify the memory layout, create admin headers, change one value in the file and then calculate again the CRC, possibility to make all changes from a user interface, order the information according to the storing address, create compressed files and other functionalities.	SW
8	Tachograph user simulation tool	Required: C# or Visual C++, OOP Optional: XML	The TSU module is a highly configurable module. Through this tool the users should have instantaneously calculated all selected outputs according to given inputs. The calculation will be done directly from ISO formulas.	SW
9	Kistler Sensor Signal Acquisition	Knowledge about embedded systems, μ C programming, signal processing Faculty of AC/ETC , year of study 3	The student shall complete the following steps: - create a hardware documentation for the sensor and the acquisition device; - get in touch with SW tools and methods used in Continental for BSW Infrastructure; - together with the support colleagues from I/O, develop a small application for signal acquisition using MPC555 processor.	SW
10	Improvements for SWP Test Automation	Good C knowledge, xml, xsd Basic hw knowledge	Implementation of possible improvements for the tool used in the SWP group for Automatic tests.	SW

No. crt.	Subject	Requirements	Description	Project's profile
11	Control PCB power by USB connection	<p>For the software part: Computer Science, Min. year 2 of study, basic knowledge of microcontroller and C programming.</p> <p>For the hardware side: Knowledge of schematic entry tools (Eagle), min. 3rd Year of Study, Analog and Digital Electronics knowledge.</p>	<p>We need a HW+SW product that should be used to control the power supply and other signals from a PCB connected via USB to a PC. The device will be controlled by a software from a PC and should allow automatic running or manual control of power or signals. For this project should work one software specialized student and one HW specialized student.</p>	SW + HW
12	Development of Unit tests for Multimedia - Connected Devices Project (VW)	<p>Studies Computer engineering or Informatics</p> <p>Technical Requirements:</p> <ul style="list-style-type: none"> - Good understanding of C, C++ - Java and/or CAN knowledge (represent an advantage) <p>English language</p>	<p>We are implementing SW solutions for Infotainment systems in Communication and Vehicle Settings functional area. For our team we would need a student to support us with C, C++ module tests. The applications we are working for are in the following domains:</p> <ul style="list-style-type: none"> - System functions; - Comfort functions (Seat adjustments, Light settings); - Instrument Cluster; - Parking functions; - External optical systems; - Phone; - Bluetooth; - Google Map. 	SW

No. crt.	Subject	Requirements	Description	Project's profile
13	Visual Configuration for Failure Detection Module (VB)	Visual Basic / Visual Basic for Microsoft Applications knowledge Visual C / C++ is an advantage	Development of a Visual Basic Application / Macro is required, which shall be able to parse a lot of input data (entered by the user or read from a file) and generate the configurations (constant arrays) for our Failure Detection Module. Additional steps: - configuration optimization to generate as few code as possible; - configuration consistency checking to not allow wrong inputs; - make possible to also include custom derivations from the standard generated configuration.	SW
14	Automotive optical measurements	Electronics 4 th year Basic electronic and optical understanding	Measurements with a specific system and automation of the measurements. The system can be used universally - whether we need to measure LCD, CRT, OLED or LED displays.	Optica Mecanica Electronica
15	Module SW test for battery sensor application	Good C knowledge Basic hw knowledge	Perform the module test using the RTR.	TESTING
16	Static code analysis support	Technical university (ETC, AC) C language, microcontrollers	Run a complete QAC static code analysis for one of our instrument cluster projects. The project is written in C language and uses a 32bit microcontroller. The task is to run the QAC analysis and interpret the results. Suggestions should be given to improve the code. A complete development environment (emulator/debugger/targets) will be available in order to test/check the proposed solutions.	SW

No. crt.	Subject	Requirements	Description	Project's profile
17	Support for I IC QA team	Technical Faculty or Computer science from University Year of study >= 2 MS Office	Assist quality assurance team in tracking the SPICE improvement program.	Information gathering and reporting
18	Software for automatic test board	Computer science/Automations/Electronics 2 nd or 3 rd year of study Good knowledge of C programming language is needed Knowledge of microcontrollers and electronics also needed	A test board is used in order to automatically test an Electronic Control Unit. The test board is already developed but the software inside has to be modified in order to fit the necessities of multiple projects. This test board is controlled by an application running on a PC. The test scripts that will be run by this application have to be created.	SW
19	Graphical UDS Tool	Technical university Electronics and Telecommunications/ Computer Science 3rd year C/C++ programming language, microcontrollers	Tool that uses UDS commands to measure/change variables of an ECU. Tool input is an A2L or map file. Tool shall provide a graphical interface. Tool shall be able to use command files (scripting). Tool shall be able to record the measured variables. Tool shall be able to display recorded signals.	SW
20	HEX Manipulation Tool	Technical university Electronics and Telecommunications/ Computer Science 3rd year C/C++ programming language, microcontrollers	Tool that manipulates a number (variable) of input HEX files (add/remove/replace data blocks, compute checksum, etc). Tool input is IntelHEX, Motorola S-Record, binary files. Tool output is IntelHEX, Motorola S-Record, binary files. Tool shall provide a graphical interface (drag and drop of HEX blocks possible). Tool shall be able to use command files (scripting).	SW

No. crt.	Subject	Requirements	Description	Project's profile
21	Projects Structure and Rights Template update	Good knowledge of .Net C#	PSRT application offers a unique interface for permission requests related to Powertrain department toolchain. It is needed to integrate some templates missing: the GUI has to be updated and mail messages to be sent to support mailboxes.	SW
22	Wheel Unit	Faculty of Computer Science, at least second year	The work consists in executing existing module tests and write new tests, in order to assure a 100% test coverage for the Wheel Unit project.	SW + TEST
23	"Failed ECU investigator" functionality	Faculty of Computer Science, at least second year	Develop a functionality which will ease investigation of ECUs with failure in field, where no debugger can be attached. This functionality must record, compute and transmit on CAN bus critical information about the unusual behavior if the ECU. Requirements are provided and full development cycle will be made: design, coding, test description, test execution.	SW
24	Command interpreter	C skills Microcontroller programming (Atmel AVR)	Program takes as input a list of commands (which are functions mapped in memory) and executes them in the specified order with the specified parameters.	SW
25	Test script GUI builder	TCL basic knowledge (tool command language – www.tcl.tk)	The GUI builder is an application which helps the user build a script using predefined buttons and functions.	SW/TESTING
26	Measurement and Calibration Tool for Kibes32 projects	2 nd or 3 rd year Basic knowledge of databases Good knowledge of C++ / C# programming languages	Create/manage measurement and calibration information database. Use of CAN communication libraries provided by Continental. Create GUI for real time access to ECU memory.	SW (PC)

No. crt.	Subject	Requirements	Description	Project's profile
27	Trace Analyzer	Faculty: Automation & Computer Science or Informatics Year of study: preferably last year Knowledge required: OOP, C++ , Java or C#	Provide an intelligent tool for trace analysis. Main features not provided by other filtering tools are: <ul style="list-style-type: none"> - regular expressions support; - variable based filtering (the ability to create filters where one could search for traces that contain certain variables and relations on these variables. e.g.: TimStamp > 00h04m50s & MemoryLoad > 256Mb); - use case based filtering (the possibility to create a collection of ordered filters that can be applied in a certain sequence); - grouping of filters; - graphic representation of data (event, time span, use case graphic items, evolution of variables over time); - usage of columns and colors (each variable can have its own column, each of the above actors can have a customized color); - exporting capabilities (content of graphic view can be exported to an image format); - easy sharing of custom filters and use cases -> facilitates knowledge sharing; - capable of loading large files (300 Mb+), files containing non ASCII characters are also loadable; - loading of traces can be done from files or serial port; 	SW
28	Motor Driver Integrated Circuit Testboard	Electrical Engineering, 2 nd year, Electronics Engineering	Design of the schematic and realization of a testboard used for analyzing the functionalities and measuring the performance of a Motor Driver Integrated Circuit.	HW
29	Module SW development for embedded transmission system	Computer Science, Automation, Electronics and Telecommunications, 3 rd year	Requirements analysis, design concept, coding in C language and integration in a complete project.	SW

No. crt.	Subject	Requirements	Description	Project's profile
30	Automated test for VW communication protocol within an embedded transmission system	Computer Science, Automation, Electronics and Telecommunications, 3 rd year	Implementation and execution of the automated test scripts for the KWP services over the TP 2.0 protocol required by VW, used in VW Touareg and Porsche Cayenne cars.	SW
31	SW application for computation of Key Performance Indicators	Computer Science profile faculties (preferable from UPT / UVT) At least 2nd year accomplished Knowledge required: Microsoft Excel & Access, Visual Basic, MySQL, etc	6 tools (most of them in XLS & Visual Basic) are used to compute the local KPI for P ES business unit. They collect & convert & copy data and generate reports, including charts. Some of the related activities are still done manually. A cockpit has to be created to integrate & synchronize these small tools, to ease the communication with the providers of the inputs (ex. via automatic emails) and to generate more efficiently the reports which are handed over to the Top Management.	SWQ
32	Testing of Function and SW using Test Automation (TA)	Electrical Engineering Faculty(automation, computer science) C Object Oriented programming language Knowledge of testing techniques	A student will be introduced to SW development process, but the focus will be testing of the Function and SW products from P ES department.	SW
33	Generic solution for clutch functionality	UPT – ETC Faculty (II, III year of study) Basic programming understanding required Matlab - Simulink is an advantage Basic electronic skills	Develop a generic solution for clutch functionality that can be easy adapted and configured for different projects clutch topology. This solution will allow us to a fast alignment to customer request. The development will be done on SDA, it is and special environment under Matlab- Simulink.	Function Development

No. crt.	Subject	Requirements	Description	Project's profile
34	Autonomous car – control system implementation with microcontrollers (SW part)	Faculty: AC, ETC Year: 3 Knowledge required: c-programming, microcontroller architecture HW knowledge represent an advantage	Build the SW platform needed to drive a small car in a designated environment. Based on the data acquisition from the sensors the car must be able to navigate from point A in point B avoiding obstacles, sending status information / receiving commands to/from a remote PC.	SW
35	Improve scripts for automatic Module Test with Rational Test Real Time	Computer Science/ Automatics/ Electronics C language programming	The student will start with training on topics like SW Development Process and applications for engine management (general overview), SW Verification and Validation Method, and SW Tools used for development and testing. Then he/she will be able to design test cases for improving or creating the testing scripts in order to check the code for different modules. The reports generated by the tool should prove the correctness of the code and the coverage of all branches and decisions.	SW
36	Automatic CAM/CRK signal configuration and automatic checking of designated function calls – call trace	Scripting languages know-how, preferable Python. Availability and quick grasper orientation in order to learn Python by his own and provide one solution in time.	Automatic CAM/CRK configuration could be a scripting package which should produce configuration files for LabCAR based on the designated inputs. Call trace is a parser script which should verify that designated interfaces are properly invoked based on the current system architecture definition – static code checking.	SW
37	Improvement of Automatic HW Verification System for Engine Control Units	Electronics/Telecommunications faculty General microcontroller knowledge, electronic measurement devices, LABVIEW knowledge	The system is used to verify automatically the Engine control units and consists of an inter-connected network of measuring devices controlled by PC. The application is done in LABVIEW.	HW

No. crt.	Subject	Requirements	Description	Project's profile
38	SPI bus monitor & decoder	Year of study: 3 or above	<p>a) Currently the SPI communication between two devices is monitored using a device from Total Phase. This device is connected on USB on PC side. The SW provided by Total Phase is only displaying raw data exchange on SPI. To make easier analysis of SPI data exchange a new SW that connects to Total Phase device shall be done. This custom application have to decode the SPI data and display it in a custom format (also log of data shall be done).</p> <p>b) Currently .h files are used to configure ICM application. GUI configuration using XSLT shall be possible.</p>	SW
39	SPI wrapper for Cheetah	Faculty – Computer Science Year of study: > 2 Knowledge required: C++ programming	<p>Cheetah is a tool interfacing between SPI and USB which allows building of SPI simulations for master side on PC (for multi microcontroler systems). Task: Build a wrapper over the Cheetah driver to allow easy creation of SPI telegrams within simulations.</p>	SW
40	Unit Testing integration in UML based development tool	Student in final year of study at Politehnica University or Informatics University UML design basic knowledge Willing to continue afterwards cooperation for further development English	<p>Currently there are 2 separate and independent tools for UML based development and for software unit testing. The task will be to integrate Unit Testing tool into the environment of development tool as to facilitate the setup and testing at module level.</p>	SW

No. crt.	Subject	Requirements	Description	Project's profile
41	Project Metrics	Computer Science or Informatics (UPT or UVT), last year of study OOP and C++ knowledge	The scope is to create a web based application for defining and representing project metrics which are used to predict project relevant data (i.e. performance, efficiency, quality). The relevant data are imported from XML files and displayed as widgets within the web application. The main advantage for this approach is the possibility to define custom views for different metrics. The data analysis will provide valuable information for the project managers - and in the same time - identical approach for comparing different projects.	SW
42	Create/adapt a SW project for a VW instrument cluster	University in a relevant field (e.g. Computer Science, Electronics, Informatics) C knowledge is required Ability and desire to learn Good English knowledge German is an advantage	The instrument clusters for passenger cars developed by our teams can only function properly when they are connected and communicating with all other ECU-s from the car or with a simulation that recreates all real conditions from the car. For purpose of demonstrating the capabilities of the instrument clusters, existing SW projects can be adapted, so that our products will be able to run a demo SW with only a power plug as input.	SW
43	Create/adapt a SW project for a Suzuki instrument cluster	University in a relevant field (e.g. Computer Science, Electronics, Informatics) C knowledge is required Ability and desire to learn Good English knowledge German is an advantage	The instrument clusters for passenger cars developed by our teams can only function properly when they are connected and communicating with all other ECU-s from the car or with a simulation that recreates all real conditions from the car. For purpose of demonstrating the capabilities of the instrument clusters, existing SW projects can be adapted, so that our products will be able to run a demo SW with only a power plug as input.	SW