Curriculum part 3, 2014-2016

AP Degree Programme Automotive Technology, Elective Elements

Autoteknolog

Version: 1.0
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Contents – curriculum part 3

1. Scope of the curriculum

1.1. Commencement of the curriculum

The curriculum, part 3, is applicable to students starting in august 2014.

2. Elective element

The electives catalogue will be continuously updated and the current electives' catalogue will be available prior to each semester. The electives' catalogue contains at present the following four electives:

1. Vehicle Dynamics (5 ECTS)
2. Project Management (5 ECTS)
3. Engine Mapping (5 ECTS)
4. Tech Project (10 ECTS)

2.1. Content and learning objectives for elective 1, Vehicle Dynamics

Weight: 5 ECTS
Placement: 1st semester

Contents
- Data logging
- Gearbox ratio calculation
- Gearbox power shift calculation
- Mono block suspension/Belleville washers
- Springs
- Race Car set-up

Learning objectives

Knowledge and understanding
The student will gain knowledge about:
- the data logging system AIM.
- calculations about the optimisation of gear box ratio.
- calculations about the optimisation of gear shifts.
- the function and calculation of Mono block suspension systems.
- springs and their purposes, as well as calculations of hardness.
- the basic skills about the set-up of racing cars.

Skills
The student will get the skills to:

- use the key methods and tools in connection with professional communication with, for example, drivers and mechanics
- document real-life issues and selected solutions
- apply industry-related English to convey the real-life issues and possible solutions to drivers and mechanics as well as others in the industry.

Competencies
The student will learn to:
- work independently.
- act as the link between race car driver and mechanic.
- analyse data from a given lane and further disseminate knowledge to the driver.
- develop skills concerning the physical setting-up of a race car, by using modern equipment and tools.

Assessment criteria
The learning objectives will be tested in an exam. The exam is assessed according to the 7-point scale.

2.2. Content and learning objectives for elective 2, Project Management

Weight: 5 ECTS
Placement: 2nd semester

Contents
- Basic methods and effective tools in project work
- Project types, understanding and perspectives
- Project formulation, planning, start, management, phases, finish and follow-up
- Results in projects
- Identifying objectives and navigating in projects under dynamic conditions
- Project Manager role
- Composition, development, motivation and management of project teams
- Managing project stakeholders

Learning objectives

Knowledge and understanding
The student will gain knowledge about:
- the role of a project manager
- various project tools, methods and models
- management of project teams

Skills
The student will get the skills to:
- formulate, plan and carry out the implementation of technical projects
- carry out communication in and around projects

Competencies

The student will learn to:
- perform basic project management tasks in engineering projects

Assessment criteria

The learning objectives will be tested in an exam. The exam is assessed according to the 7-point scale.

2.3. Content and learning objectives for elective 3, Engine Mapping

Weight: 5 ECTS
Placement: 3rd semester

Contents:
- Engine mapping characteristics and applications
- Engine tuning
- Emissions optimisation
- Engine control related to vehicle dynamic safety systems
- Basic programming of electronic control units.

Learning objectives

Knowledge

The student will gain knowledge about:
- the automotive discipline 'Engine Mapping' which concerns the optimisation of the engine in relation to fuel combustion and exhaust after treatment systems.
- the engine control system relationship to the vehicle dynamic safety system such as electronic stability control.
- theoretical and practical tasks, enabling the student to understand the engineering level.

Skills

The student will get the skills to:
- be able to distinguish between applications for engine mapping such as petrol and diesel vehicles.
- have basic knowledge from data analysis and the measurements in test cells and from the vehicle itself.
- have a basic understanding of programming and flashing of electronic control units.
- be able to distinguish between engine tuning and emissions optimisation, and to understand the different control methods within this topic.
- know the boundaries and limitations of engine optimisation systems.

Competencies

The student will learn to:
- assist development projects within the field of engine optimisation.

- identify all components for constructing an engine mapping system and choose the right configuration for a specific task with an analytic approach.
- prepare a complete vehicle test for engine optimisation.
- carry out basic power, flow and efficiency calculations in relation to setting up a test cell.
- design analysis tools for the post-processing of data and communicate the results from a practical engine testing in a non-technical language.

Assessment criteria
The learning objectives will be tested in an exam. The exam is assessed according to the 7-point scale.

2.4. Content and learning objectives for elective 4, Tech Project

Weight: 10 ECTS
Placement: 3rd semester

Contents
- Professional oral communication
- Professional written communication

Learning objectives

Knowledge and understanding
The student will gain knowledge about:
- acquiring development based knowledge of practices and methods associated with psychological and communicative tools that can be used for communication.
- understanding the practice and central choices for applied theories and methods for communication with employees, customers and suppliers.

Skills
The student will get the skills to:
- use the key methods and tools in the context of professional communication with, for example, importers and manufacturers
- document real-life issues and selected solutions
- apply industry-related English to convey the real-life issues and possible solutions to customers and others in the industry.

Competencies
The student will learn to:
- manage oral and written communication
- participate in disciplinary and interdisciplinary cooperation with a professional approach in an industry-related English.
- in a structured context, acquire new knowledge, skills and competencies to communicate with customers and others in the industry.

Assessment criteria

The learning objectives will be tested in an exam. The exam is assessed according to the 7-point scale.