

S6 - Project Driving Innovation

General information OWE / course	
Degree programme	Automotive Engineering
Semester	S6
Course Code (OSIRIS)	DRIVIN05
Academic year	2025
Name Course short Dutch	AUM S6 Project
Name Course long Dutch	Driving Innovation
Name Course short English	AUM S6 Project
Name Course long English	Driving Innovation
Coordinating unit	AEA
Course type	OWE
Credits	25
Degree	B (post propaedeutic bachelor)
Grading scale course grades	Whole (without decimal)
Language of communication	English
Study load in hours	700
Instructional modes	OW (Education)
Starting term education	P3A
Duration of education	Semester
Compensation options	Not applicable.
Entry requirements course	This semester requires a professional attitude from the student, both in collaboration with the team and the client, as well as in obtaining and processing learning material. This can be translated into, for example, - successfully completing S3 and S4 projects and internship experience - completed P-phase and completion of a number of substantive subjects from the 2nd year. When in doubt, the Study Career Coach or Learning Team Coach is consulted.
General discription	Note: This semester is taught in English, and the "Algemene omschrijving" is therefore also in English. S6 Project prepares students to work as young professionals with new technologies within a professional practice. This is done by focusing on projects where new technological developments and research come together. In this way students are prepared for their future as professionals and this allows students to explore the possibilities that new technologies offer. S6 works with state of the art projects that: • come from the professional field • explore the possibilities of new technology • are multidisciplinary in nature The projects take place in a real working environment which means that: • Students act as Junior Engineers. • The teacher/researcher supervising the team acts as the Senior Engineer, coaching rather than teaching. • A second teacher/researcher acts as the Expert and guides

	students to expand their knowledge and skills in their area of expertise. This knowledge and skills are beyond what has been taught in the first two years and is of added value to the project.
Mandatory participation	Yes
Examination	
Exam number in OSIRIS	TOETS-01
Fulltime/Parttime	Fulltime
Description (Dutch)	Driving Innovation project
Description (English)	Driving Innovation project
Format (modular)exam	PORT Portfolio
Weight factor of (modular) exam	1
Minimum result	5,5
Grading scale	Decimal
Exam sittings	YEARA
Written exam type	NOT APPLICABLE
Assessment criteria (OWE)/Learning outcomes (EVL)	Seven learning outcomes are defined for the S6 project – Professional Learning Community: - Shows investigative- and reflective attitude towards project, client and result in a complex, uncertain working environment. - Shows effective collaboration with team members, senior engineers, experts and clients. - Works in a team to deliver a project result appreciated by client and senior engineer. - Shows professional communication of own and team results to the outside world. - Applies in a conscious matter a method of project management and planning (e.g., agile skills) which results in a traceable and flexible project planning leading to involvement of all relevant stakeholders. - Acts as a junior Engineer, capable of choosing an appropriate research- or design methodology, resulting in a contribution to the end-result of a complex project. - Delivers an engineering product within the field of expertise, which shows self-development and openness towards own network of expertise, as can be expected of a Junior Engineer. The exam consists of a portfolio. The 7 learning outcomes are grouped in 3 categories: - Attitude and Collaboration (outcome 1, 2, 4 and 5). - Project Result (outcome 3). - Task Execution (learning outcome 6 and 7). The learning outcomes are used as assessment criteria with rubrics indicating the extent to which the criteria have or have not been met. The weight of the each learning outcomes is 10% with the exception of outcome 7 with a weight of 40% The arithmetic mean of the 5 learning outcomes of categories 1 plus 2 and the outcome of category 3 shall both

	be sufficient (5.5). If the arithmetic mean of categories 1 plus 2 is insufficient, a retake is not possible as these categories are linked to the execution of a project. If category 3 is insufficient, a retake is possible All learning outcomes of the S6 project are assessed individually, with exception of learning outcome 3, which deals with the project result. This group grade has a weight 10% of the final individual grade.
Educational activities offered	Not applicable

S6 - MEB - Mobility concept

General information OWE / course	
Degree programme	Automotive Engineering
Semester	S6
Course Code (OSIRIS)	MBGULA01
Academic year	2025
Name Course short Dutch	AUM S6 MEB Mobiliteitsconcept
Name Course long Dutch	MB Mobiliteitsconcept
Name Course short English	AUM S6 MEB Mobility concept
Name Course long English	MB Mobility concept
Coordinating unit	AEA
Course type	OWE
Credits	5
Degree	B (post propaedeutic bachelor)
Grading scale course grades	Word qualification
Language of communication	English
Study load in hours	140
Instructional modes	OW (Education)
Starting term education	P3A
Duration of education	Semester
Compensation options	Not applicable.
Entry requirements course	Not applicable.
General discription	See learning outcomes
Mandatory participation	No
Examination	
Exam number in OSIRIS	TOETS-01
Fulltime/Parttime	Fulltime
Description (Dutch)	Assessment
Description (English)	Assessment
Format (modular)exam	PERF Performance
Weight factor of (modular) exam	1
Minimum result	5,5
Grading scale	Word qualification
Exam sittings	YEARA
Written exam type	NOT APPLICABLE
Assessment criteria (OWE)/Learning outcomes (EVL)	1. Vision formation and concept development - o The student can develop a vision for an innovative vehicle or mobility concept, taking into account relevant aspects such as customer requirements, technological possibilities and sustainability. 1. Requirements analysis and conflict management - o The student can draw up a package of requirements based on a proposed case, based on customer requirements and market analysis. - o The student can identify, analyse and weigh up conflicting requirements to arrive at an optimal solution that meets the customer's needs. 2. Energy flows and modelling - o The student can map the energy flows of the proposed vehicle or mobility concept at 'grey box' level and, if

	necessary, model them at meso level. - o The student can analyse and optimise the energy management of the concept. 3. Total Cost of Ownership (TCO) and scenario analysis - o The student can calculate the Total Cost of Ownership (TCO) for the proposed vehicle or mobility concept. - o The student can perform a 'what-if' scenario to analyse the impact of the loss of a critical technology or raw material (e.g. due to trade restrictions) and formulate possible alternative solutions. 4. Sustainability and circularity - o The student can assess whether alternative fuels (such as CO₂-neutral options) are suitable for the vehicle concept. - o The student can evaluate the concept on circularity and 'Design for Repair' principles, including servicability and life extension. 5. Marketing and communication - o The student can develop a visually appealing infographic or brochure that convincingly presents the concept. - o The student can devise commercial actions that contribute to the marketing and marketability of the concept. 6. Supply Chain Management - o The student can analyse the supply chain of the proposed concept and evaluate the impact of logistical choices on costs, sustainability and availability.
Educational activities offered	Not applicable

S6 - VDT - Advanced Material Science and Fatigue

General information OWE / course	
Degree programme	Automotive Engineering
Semester	S6
Course Code (OSIRIS)	AMSFAD01
Academic year	2025
Name Course short Dutch	AUM S6 VDT AMSF
Name Course long Dutch	Advanced Material Science and Fatigue
Name Course short English	AUM S6 VDT AMSF
Name Course long English	Advanced Material Science and Fatigue
Coordinating unit	AEA
Course type	OWE
Credits	2,5
Degree	B (post propaedeutic bachelor)
Grading scale course grades	Whole (without decimal)
Language of communication	English
Study load in hours	70
Instructional modes	OW (Education)
Starting term education	P3A
Duration of education	Term
Compensation options	Not applicable.
Entry requirements course	Not applicable.
General discription	In this unit of study, you learn about life-span and failure of constructions and parts thereof, mainly from a materials science point of view, supported by relevant aspects of mechanics of materials. You study the fundamental aspects underlying material properties (and testing), failure, corrosion, crack formation and propagation, fatigue, failure criteria, buckling, and structural stability. Knowledge of failure of materials and constructions allows the engineer to make informed choices during the design process to optimise a design with respect to the demands of stakeholders, as detailed in a design brief, and set up a choice table. Additionally, knowledge of the causes of failure allows an engineer to make informed choices in manufacturing to realise a design.
Mandatory participation	No
Examination	
Exam number in OSIRIS	TOETS-01
Fulltime/Parttime	Fulltime
Description (Dutch)	Advanced Material Science and Fatigue
Description (English)	Advanced Material Science and Fatigue
Format (modular)exam	KENN Knowledge exam
Weight factor of (modular) exam	1
Minimum result	5,5
Grading scale	Decimal
Exam sittings	P3A (1x) P4A (1x)
Written exam type	ANS written

Assessment criteria (OWE)/Learning outcomes (EVL)	The student can: - identify and explain relevant aspects of life and failure of materials, parts, and constructions; - make informed choices with respect to life and failure of materials, parts, and constructions to optimise a design; - make informed choices with respect to life and failure of materials, parts, and constructions to optimise production and realisation; - can quantify choices with calculations.
Educational activities offered	Not applicable

S6 - VDT - External Computational Fluid Dynamics

General information OWE / course	
Degree programme	Automotive Engineering
Semester	S6
Course Code (OSIRIS)	EXTCFD01
Academic year	2025
Name Course short Dutch	AUM S6 VDT Computational Fluid Dynamics
Name Course long Dutch	External Computational Fluid Dynamics
Name Course short English	AUM S6 VDT Computational Fluid Dynamics
Name Course long English	External Computational Fluid Dynamics
Coordinating unit	AEA
Course type	OWE
Credits	2,5
Degree	B (post propaedeutic bachelor)
Grading scale course grades	Whole (without decimal)
Language of communication	English
Study load in hours	70
Instructional modes	OW (Education)
Starting term education	P3A
Duration of education	Semester
Compensation options	Not applicable.
Entry requirements course	It is important that the student meets the following guidelines, so as to be able to work as required: - Attendance of Automotive Design in semester 4.
General discription	In this unit of study, you learn how to create, optimise and validate an external Computational Fluid Dynamics (CFD) model. Such a model can simulate the external flow around a vehicle body. This unit of study begins with a short theoretical foundation. This is followed with an introductory course in Solidworks FlowWorks, during which you create the CFD model. This model is then validated with a wind tunnel test. This is because you make a trade-off between accuracy and calculation time when setting up a model, therefore the model has to be checked for sufficient accuracy. After the model is validated you then adjust the geometry of your model to minimise the drag or increase the downforce. As an automotive engineer this knowledge is essential for designing the outer body shape of vehicles.
Mandatory participation	No
Examination	
Exam number in OSIRIS	TOETS-01
Fulltime/Parttime	Fulltime
Description (Dutch)	External Computational Fluid Dynamics
Description (English)	External Computational Fluid Dynamics
Format (modular)exam	PROD (Professional) product
Weight factor of (modular) exam	1
Minimum result	5,5
Grading scale	Decimal
Exam sittings	YEARA

Written exam type	NOT APPLICABLE
Assessment criteria (OWE)/Learning outcomes (EVL)	A student can: - create an external Computational Fluid Dynamics (CFD) model; - validate the CFD model with a wind tunnel test; - improve the CFD model in order to optimise the drag or the downforce of a vehicle body or construction; - document the validation test and set-up of the CFD model; - substantiate the choices made in the set-up of the CFD model in the report.
Educational activities offered	Not applicable

S6 - VSC - Modeling and Control

General information OWE / course	
Degree programme	Automotive Engineering
Semester	S6
Course Code (OSIRIS)	MODCON01
Academic year	2025
Name Course short Dutch	AUM S6 VSC Modeling and Control
Name Course long Dutch	Modeling and Control
Name Course short English	AUM S6 VSC Modeling and Control
Name Course long English	Modeling and Control
Coordinating unit	AEA
Course type	OWE
Credits	2,5
Degree	B (post propaedeutic bachelor)
Grading scale course grades	Whole (without decimal)
Language of communication	English
Study load in hours	70
Instructional modes	OW (Education)
Starting term education	P3A
Duration of education	Term
Compensation options	Not applicable
Entry requirements course	This module builds on the Semester 4 specialization VT. Students are assumed to have the knowledge and skills from this specialization.
General discription	In this unit of study the student learns how to translate a (vehicle) system into a mathematical model and learns how to control this (vehicle) system. Modelling and control of systems is an important phase in the designing process. Controlling systems is needed in a lot of engineering (e.g. Robotics, Mechatronics) but also in vehicle engineering. For example vehicle dynamics can be controlled, which will then improve comfort and safety of the vehicle.
Mandatory participation	No
Examination	
Exam number in OSIRIS	TOETS-01
Fulltime/Parttime	Fulltime
Description (Dutch)	Modeling and Control
Description (English)	Modeling and Control
Format (modular)exam	KENN Knowledge exam
Weight factor of (modular) exam	1
Minimum result	5,5
Grading scale	Decimal
Exam sittings	P3A (1x) P4A (1x)
Written exam type	MYLAB BYOD ZSY
Assessment criteria (OWE)/Learning outcomes (EVL)	The student can: - Set up differential equations from systemsderive and understand the transfer function following from the differential equation.

	- Define a control strategy belonging to the system. - Design a model-based robust PID controller.
Educational activities offered	Not applicable

S6 - VSC - Programming Basics

General information OWE / course	
Degree programme	Automotive Engineering
Semester	S6
Course Code (OSIRIS)	VSCPRG01
Academic year	2025
Name Course short Dutch	AUM S6 VSC Programming Basics
Name Course long Dutch	Programming Basics
Name Course short English	AUM S6 VSC Programming Basics
Name Course long English	Programming Basics
Coordinating unit	AEA
Course type	OWE
Credits	2,5
Degree	B (post propaedeutic bachelor)
Grading scale course grades	Whole (without decimal)
Language of communication	English
Study load in hours	70
Instructional modes	OW (Education)
Starting term education	P3A
Duration of education	Term
Compensation options	Not applicable
Entry requirements course	Not applicable.
General discription	Within the Automotive sector, a lot of effort is currently being put into automating vehicle functionality. This is especially true in the field of ADAS systems (Advanced Driver Assist Systems) such as lane keeping, automatic parking, adaptive cruise control, etc. till fully autonomous driving. Computers and automated systems are also used in powertrain control, in-car entertainment systems and the like. A further development is that more and more vehicles and traffic systems (traffic lights, parking facilities, etc.) are integrated into one large network via the Internet of Things (IoT) and exchange data. For all these applications, some knowledge of programming is required. This module provides an introduction to programming and related skills, such as operating systems. The lessons are given in the form of workshops. In addition, there is the option to arrange one or more guest lessons to go deeper into relevant, related topics. Python is initially chosen as the programming language. This is currently one of the most used languages and has a steep learning curve. Developments are moving quickly in this area, so another language may be more appropriate in the future. Knowledge level is assessed on the basis of a final assignment, which the students must explain individually.
Mandatory participation	No
Examination	
Exam number in OSIRIS	TOETS-01
Fulltime/Parttime	Fulltime
Description (Dutch)	VEC Programming Basics

Description (English)	VEC Programming Basics
Format (modular)exam	PROD (Professional) product
Weight factor of (modular) exam	1
Minimum result	5,5
Grading scale	Decimal
Exam sittings	YEARA
Written exam type	Not applicable
Assessment criteria (OWE)/Learning outcomes (EVL)	• The student creates a working program in which the basic principles of programming are correctly applied (the program contains the correct data types, input and output, repetition structures, functions, if-else statements). • The student divides the application into subtasks and creates functions to implement those subtasks. • The student correctly applies the principles of object-oriented programming in the program. • The student writes a program in which data is read from and/or written to files. • The student writes a program with a graphical user interface. • The student provides his programs with sufficient comments so that the operation of the components is clear.
Educational activities offered	Not applicable

S8 – Graduation assignment Automotive

General information OWE / course	
Degree programme	Automotive Engineering
Semester	S8
Course Code (OSIRIS)	AFSTUA48
Academic year	2025
Name Course short Dutch	Afstuderen Automotive
Name Course long Dutch	Afstuderen Automotive
Name Course short English	Graduation assignment Automotive
Name Course long English	Graduation assignment Automotive
Coordinating unit	AEA
Course type	OWE
Credits	30
Degree	B (post propaedeutic bachelor)
Grading scale course grades	Whole (without decimal)
Language of communication	English
Study load in hours	840
Instructional modes	OW (Education)
Starting term education	P1A P2A P3A P4A
Duration of education	Semester
Compensation options	Not applicable
Entry requirements course	In the graduation assignment, the student combines all the knowledge they acquired during the major. So for admission to the graduation assignment, the student must have an assignment approved by the Expert Team/Community of Practice. The defence of the graduation project can only take place once the student has earned all 180 credits from the propaedeutic phase and post-propaedeutic phase (excluding the minor). The student may start the graduation assignment if they can earn these 180 credits within the foreseeable future. The minor need not have been followed/completed before starting the graduation assignment. The study coach gives the student a recommendation about whether they can start the graduation project based on the credits earned. Please note: The graduation meeting for the full-time degree programme must take place within three consecutive terms (this includes any resit processes). This means that the student will have to start a new graduation assignment if they do not have 180 credits (excluding minor) registered in OSIRIS within three consecutive terms after the start of their graduation assignment and/or have not passed after the resit programme.
General discription	The graduation assignment is a demonstration of your competences. A student looks for an assignment that

	involves completing professional tasks, and a company where he/she can perform that assignment, and prepares a project proposal. After approval, they carry out the assignment. The result of the assignment will be adequately substantiated in consultation with the client and the school. The assignment is preferably carried out at one of the companies listed in the HAN Automotive Engineering list (these are preferred partners or approved companies). Mandatory: 1. Analysis (level 3) 5. Management (level 1) 8. Professionalisation (level 3) Choice: 2. Design (level 2 or 3) 3. Realisation (level 2 or 3) 4. Control (level 2 or 3) 6. Consultation (level 2 or 3) 7. Research (level 2 or 3) Depending on the specific graduation project, the student has to choose two of the above listed competences. The most relevant competency is completed at level 3, and an additional competency at level 2. Assessment portfolio / report / final graduation project (individual assessment/written). Assessment (individual assessment/oral).
Mandatory participation	No
Examination	
Exam number in OSIRIS	TOETS-01
Fulltime/Parttime	Fulltime
Description (Dutch)	Afstuderen
Description (English)	Graduation Project
Format (modular)exam	PROD (Professional) product
Weight factor of (modular) exam	1
Minimum result	5,5
Grading scale	Decimal
Exam sittings	YEARA
Written exam type	Not applicable
Assessment criteria (OWE)/Learning outcomes (EVL)	Mandatory: 1. Analysis (level 3) 5 Management (level 1) 8. Professionalisation (level 3) Option, depending on the specific graduation project: * the most relevant extra competences at level 3, and * the second most relevant extra competences at level 2 - Assessment portfolio / report / final graduation project (individual assessment / written). - Assessment (individual assessment; oral).
Educational activities offered	Not applicable