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Curriculum at Lahti University of Applied Sciences
2016-2017

Degree Program in Design 16S Vehicle Design

The degree programme in Design, major in Vehicle Design, focuses on the design of vehicles in private transport, and public passenger and freight transport. A vehicle designer can be involved in the design of the shape of vehicles, their control systems, parts, services, or other related products. A vehicle designer typically works on a product development team with professionals from other fields. Design categories include motor or human-powered vehicles that travel by water, air or land. The vehicles can be designed for use in leisure, commercial traffic, or public passenger or freight transport.

The studies focus on design processes, product development, usability, ergonomics, and the management of various visualisation and model-building techniques.

Vehicle design studies take the form of individual and group work, under the supervision of experts, in lectures or projects, to be realised in cooperation with companies in the field, when possible. To be successful in their profession, students need to have good visual expression, skills in visual perception, the ability to constantly look for new information, and the interaction skills to cooperate with experts in other fields. The studies provide the students with the knowledge and skills to work in other product design roles and to apply for further studies in the field.

Code	Name	1 y	2 y	3 y	4 y	ECTS total
MIAMU16-1000	**CORE COMPETENCIES**					**210**
MIAMU16-1001	**BASIC STUDIES**					**60**
MIAMU16-1002	**Introduction to design**					**15**
05MUJOHMUOP	Introduction to design studies	5				5
05MUMUDITOI	Designer's digital environments	6				6
05MUMUTEOKÄ	Design theory and consepts	4				4
MIAMU16-1003	**Artistic basis of design**					**15**
05MUTAHI	Art history	5				5
05MUVIMU	Visual design	7				7
05MUVÄRI	Colour	3				3
MIAMU16-1004	**Design process**					**30**
05MUAJOTEK	Introduction to vehicle technology	3				3
05MUAJOPER	Introduction to vehicle design	3				3
05MUMUPIIR	Design drawing	5				5
05MUMUPROS1	Design process I	4				4
05MUMATEME	Model-building techniques, metal	4				4
05MUMATEMU	Model-building techniques, plastic	4				4
05MUMATEPU	Model-building techniques, wood	4				4

MI00AX89	Swedish language, written skills	1,5				1,5
MI00AX90	Swedish language, oral skills	1,5				1,5
MIAMU16-1005	**PROFESSIONAL STUDIES**					**105**
MIAMU16-1006	**User-centred design**					**14**
05MUKÄYTMU	User-centred design		5			5
05MUKÄYTTKM	User-centred research and development methods		2			2
05MUELÄVÄ1	Life drawing I		3			3
MI00AW67	Professional communication		3			3
MI00AW69	Information literacy		1			1
MIAMU16-1007	**Eco-efficient design**					**15**
05MUYMPTEMU	Eco-efficient design		5			5
05MUAJOMALT	Model-building techniques for vehicle design		4			4
05MUSYVTMET	Advanced manufacturing technology, metal		3			3
05MUSYVTMUO	Advanced manufacturing technology, plastic		3			3
MIAMU16-1008	**Designer's presentation**					**15**
05MUMUPORTF	Designer's portfolio		6			6
05MUESTMUP	Design drawing and presentation techniques		3			3
05MUPIMA	Drawing and painting		3			3
MI00AW71	Business English basics		3			3
MIAMU16-1009	**Advanced design process**					**16**
05MUMUOPR2	Design process 2		5			5
05MUMALTYÖ	Modelling as a tool		5			5
05MUPLAST1	Sculpture I		3			3
05MUMUOHIST	History of design		3			3
MIAMU16-1010	**Product development and the designer**					**15**
05MUTUOKEPR	Product development project			8		8
05MULUOVAYR	Entrepreneurship in the creative industry			3		3
05MUTIESUVA	Computer-aided design and manufacturing			4		4
MIAMU16-1011	**Professional profile**					**15**
05MUMUIDEN	Designer identity				5	5
05MUSTRAMU	Strategic design				5	5
05MUTUTU	Futures research				5	5
MIAMU16-1012	**Advanced professional studies**					**15**
05MUASIAPRO	Expert project				7	7
05MUSYAJOMT	Advanced manufacturing technology, model-building techniques for vehicle design				5	5
05MUTKMOPIT	Research and development methods				3	3
MIAMU16-1015	**PROFESSIONAL PRACTICE**					**30**
05MUERIH	Specialisation practice			15		15
05MUTEH	Professional practice			15		15

MIAMU16-1016	**THESIS**					**15**
05MUOPN	Thesis				15	15
MIAMU16-1017	**COMPLEMENTARY COMPETENCIES**					**30**
MIAMU16-1018	**OTHER PROFESSIONAL STUDIES**					**15**
05MUKÄYTSU	User interface design			5		5
05MUERIRYS	Design for special groups			5		5
05MUAJOESIT	Presentation techniques in vehicle design			5		5
MIAMU16-1019	**ELECTIVE STUDIES**					**15**

MIAMU16-1000 CORE COMPETENCIES: 210 ECTS

MIAMU16-1001 BASIC STUDIES: 60 ECTS

MIAMU16-1002 Introduction to design: 15 ECTS

Learning outcomes of the study module
Students

- know how to use the concepts of design, and explain the job description of a designer
- have basic skills in using the working methods, tools and equipment of a designer
- know how work interactively as a member of a team
- know how to set study objectives
- know how to observe their environment in a conscious and goal-oriented manner

Courses included in the study module
Introduction to design studies 5 ECTS
Design theory and concepts 4 ECTS
Designer's digital environments 6 ECTS

05MUJOHMUOP Introduction to design studies: 5 ECTS

Learning outcomes
Students

- know how to study according to the principles and operational environment of the degree programme
- know how to describe the professional studies of a designer, and the fields within design
- know how to describe the parts and flow of the design process
- know how to generate ideas and solve problems together with other design students
- know how to recognise the role of communal interaction in the design process

05MUMUDITOI Designer's digital environments: 6 ECTS

Learning outcomes
Students

- know how to use the basic digital equipment and information systems of the institute
- know how to use information networks for storing and sharing materials
- know how to use digital image equipment and scanners for information-gathering, note-making, observation and documentation
- know how to use data projectors and laser printers
- know how to use a pressure-sensitive graphics tablet with image-editing and drawing programs
- know how to create presentation materials according to the design principles of commercial graphics
- know how to create electronic or printed presentation materials using presentation graphics, image-editing, vector graphics and desktop publishing programs

05MUMUTEOKÄ Design theory and consepts: 4 ECTS

Learning outcomes
Students

- are familiar with the theoretical basis and starting points of design
- know how to use the basic concepts of design
- know how to work according to the theoretical starting points
- know how to test the theories of design in practice

MIAMU16-1003 Artistic basis of design: 15 ECTS

Learning outcomes of the study module
Students

- know how to verbally describe and explain the history of visual arts and phenomena in contemporary art
- know how to discuss the theory of visual arts
- know how to use visual skills of image layout, composition and spatial representation
- know how to describe theories of colour and how to apply them as part of design practice
- know how to convey interpretations of their observations using various media
- know how to use art concepts in various situations in which images are interpreted and assessed

Courses included in the study module
Visual design 7 ECTS
Colour 3 ECTS
Art history 5 ECTS

05MUTAHI Art history: 5 ECTS

Learning outcomes
Students

- know how to describe the basics of Western visual arts, architecture and other visual culture, from prehistory to modern times
- know how to use the research concepts of art history and visual culture, and how to make use of research
- know how to view their professional field as part of artistic practice and the visual environment

- know how to use their knowledge of phenomena in art history in the assignments in their major subject

05MUVIMU Visual design: 7 ECTS

Learning outcomes
Students

- know how to work creatively and independently in the design and communication process
- know how to apply their broader visual-artistic education and skills in a versatile manner
- know how to present their work to peer audiences and evaluate them critically
- know how to make use of various visual idea generation methods
- know how to use their observations and emotions as a starting point for creative thinking
- know how to make connections between visual arts and other visual culture
- know how to analyse, interpret and explain today's visual culture

05MUVÄRI Colour: 3 ECTS

Learning outcomes
Students

- know how to verbally describe the historical foundations of modern colour theory and aesthetics
- know how to present the totality and relativity of colour observation using visual exercises
- know how to verbally describe the impressionistic, expressive and symbolic quality of colour and colour combinations, and how to apply this competence to visual exercises
- know how to creatively apply the laws of colour interaction
- know how to discuss classical colour theory and its applications in art and design

MIAMU16-1004 Design process: 30 ECTS

Learning outcomes of the study module
Students

- know how to work according to the basic principles of design processes
- know how to work according to the basic principles of graphic design
- know how to assess the importance of the manufacturing process in the design process
- know how to define the key materials and their uses
- know how to use various idea-generation techniques and problem-solving skills
- have the oral and written skills in Swedish to be able to communicate about issues in their own professional field
- know how to use presentation techniques as part of the design process
- know how to be able to systematically document their work and understand the importance of a portfolio

05MUAJOTEK Introduction to vehicle technology: 3 ECTS

Learning outcomes
Students

- know how to use the concepts of vehicle technology
- know how to describe the structural and technical solutions of different vehicles
- know how to discuss the role of technical design in vehicle design
- know how to describe the requirements of vehicle technology and how to apply them in vehicle design

05MUAJOPER Introduction to vehicle design: 3 ECTS

Learning outcomes
Students

- know how to describe the principles of vehicle design
- know how to describe the role of ergonomics in vehicle design
- know how to use the concepts of the vehicle design industry

05MUMUPIIR Design drawing: 5 ECTS

Learning outcomes
Students

- know how to create freehand images of their ideas and designs
- know how to create and interpret technical drawings
- know how to communicate design ideas using sketches

05MUMUPROS1 Design process I: 4 ECTS

Learning outcomes
Students

- know how to work according to the basic principles of design processes
- know how to use idea-generation and problem-solving skills, self-expression and creative thinking
- know how to work in a group
- know how to create three-dimensional models using different methods

05MUMATEME Model-building techniques, metal: 4 ECTS

Learning outcomes
Students

- know how to choose the most suitable metal materials and working methods for their projects
- know how to use metalworking tools and machines
- know how to compare and assess surface treatment methods and materials for metal products
- know how to choose and use suitable techniques and structures for metal joints
- know how to carry out a project of their own design

05MUMATEMU Model-building techniques, plastic: 4 ECTS

Learning outcomes
Students

- know how to use tools and machines to work plastic
- know how to describe techniques for joining plastic, and typical plastic structures

05MUMATEPU Model-building techniques, wood: 4 ECTS

Learning outcomes
Students

- know how to use tools and machines to work wood and wood-based materials
- know how to apply basic information on wood, wood-joining techniques, and wood-based materials and the techniques to work them
- know how to design wood or wood-based products using different techniques
- know how to use simple surface treatment techniques
- know how to complete the course assignments under supervision

MI00AX89 Swedish language, written skills: 1.5 ECTS

Learning outcomes
The course provides skills that correspond to level B1 in the Common European Framework for Languages:

"Can understand the main points of clear standard input on familiar matters regularly encountered in work, school, and leisure. Can deal with most situations likely to arise while travelling in an area where the language is spoken. Can produce simple connected text on topics that are familiar or of personal interest. Can describe experiences and events, dreams, hopes and ambitions. Can give reasons and explanations for opinions and plans."
The above description indicates the skill level, but it is based on objectives related to standard language. The description is adapted for each professional field.

MI00AX90 Swedish language, oral skills: 1.5 ECTS

Learning outcomes
The course provides skills that correspond to level B1 in the Common European Framework for Languages:

"Can understand the main points of clear standard input on familiar matters regularly encountered in work, school, and leisure. Can deal with most situations likely to arise while travelling in an area where the language is spoken. Can produce simple connected text on topics that are familiar or of personal interest. Can describe experiences and events, dreams, hopes and ambitions. Can give reasons and explanations for opinions and plans."
The above description indicates the skill level, but it is based on objectives related to standard language. The description is adapted for each professional field.

MIAMU16-1005 PROFESSIONAL STUDIES: 105 ECTS

MIAMU16-1006 User-centred design: 14 ECTS

Learning outcomes of the study module
Students

- know how to describe the role of user-centred design and ergonomics in products
- know how to use various methods of user research
- know how to use user research for their own design assignment
- know how to write high-quality professional texts
- know how to communicate orally, and in writing, in various business situations
- know how to portray the human body and its movements through drawing

05MUKÄYTMU User-centred design: 5 ECTS

Learning outcomes
Students

- know how to use the basic principles of user-centred design in their design work
- know how to use research material to determine user groups in their design work
- know how to define and prioritise different usability perspectives in their design work
- know how to use different research methods to gather information about users
- know how to apply the "design for all" principle in their design work
- know how to design a product from a user-centred point of view

05MUKÄYTTKM User-centred research and development methods: 2 ECTS

Learning outcomes
Students

- know how to use user-centred methods in development and research, and the design process
- know how to apply user information in the design process and how to document it
- know how to find and analyse user information

05MUELÄVÄ1 Life drawing I: 3 ECTS

Learning outcomes
Students

- know how to make observations and draw a three-dimensional human image on two-dimensional paper
- know how to measure human proportions on papers of different sizes and develop their sense of proportion
- know how to specify and contrast shades of light and shadow, and develop the ability to differentiate between shades
- know how to capture a shape and changes in it, by outlining and shading
- know how to use observations to create a basic image that captures the movement, shape and structure of the human body

- know how to create a croquis book (a portfolio) from their drawings

MI00AW67 Professional communication: 3 ECTS

Learning outcomes
Students know how to

- assess and interpret the meanings of various messages, and develop their communication skills
- apply oral and written communication skills in an appropriate and dialogic manner in real-life customer service
- apply teamwork skills in meetings and negotiations
- plan and produce customer texts and scientific articles of high linguistic quality

MI00AW69 Information literacy: 1 ECTS

Learning outcomes
Students know how to

- recognise their information needs and the importance of information-gathering at various stages of their studies
- gather the information they need in their studies in an efficient and versatile manner
- use different types of source materials and services in their studies
- apply source criticism to information materials
- use information ethically

MIAMU16-1007 Eco-efficient design: 15 ECTS

Learning outcomes of the study module
Students

- know how to describe the principles and possibilities of eco-efficient and ethical thinking
- know how to assess the environmental impact of various manufacturing technologies
- know how to use eco-efficient manufacturing technology in their work

05MUYMPTEMU Eco-efficient design: 5 ECTS

Learning outcomes
Students

- know how to design products considering information on their life cycle, materials, manufacturing methods, and eco-efficient technologies and practices
- know how to find and use information on the environmental legislation that concerns design and their professional field
- know how to discuss the principles of eco-efficient thinking
- know how to choose eco-efficient product development strategies as part of design
- know how to combine eco-efficient thinking, user-centred design and consumer behaviour analysis
- know how to anticipate the effect of environmental issues on business and competitiveness
- know how to create a product design

- know how to report the environmental impact of a product throughout its life cycle

05MUAJOMALT Model-building techniques for vehicle design: 4 ECTS

Learning outcomes
Students

- know how to find the appropriate model-building techniques for the various phases of the vehicle design process
- know how to optimally use and take advantage of materials, techniques and structures when designing and manufacturing models and end products
- know how to create a wax model

05MUSYVTMET Advanced manufacturing technology, metal: 3 ECTS

Learning outcomes
Students

- know how to use the production and manufacturing methods of the metal industry in their design process
- know how to optimally use metal materials, technologies, techniques and structures
- know how to design and manufacture workable models and finished products

05MUSYVTMUO Advanced manufacturing technology, plastic: 3 ECTS

Learning outcomes
Students

- know how to compare the properties, methods of working, and uses of plastics
- know how to use the production and manufacturing methods of plastic products in design processes
- know how to describe techniques for joining plastic, and typical plastic structures
- know how to choose appropriate surface treatment techniques and materials for the design project
- know how to use reinforced plastics and how to safely operate plastics-working and -moulding tools and machinery to make models

MIAMU16-1008 Designer's presentation: 15 ECTS

Learning outcomes of the study module
Students

- know how to use visual expression as the designer's instrument
- know how to experiment with and assess various (visual) techniques and methods
- know how to create product presentations
- know how to create commercial graphics
- know how to use many styles to create a presentation in English
- know how to create a representative portfolio presenting the results and processes of their work
- know how to apply the principles of product presentation in creating a portfolio

05MUMUPORTF Designer's portfolio: 6 ECTS

Learning outcomes
Students

- know how to describe and explain the typical structure of a portfolio
- know how to assess the influence of the presentation of a portfolio on the image of a designer's competencies and profile
- know how to explain the importance of a portfolio to a designer
- know how to assess the relative quality of a portfolio
- know how to name printing materials used in the field of graphics
- know how to explain the material requirements and cost structures of the modern printing process
- know how to maintain and complement their portfolio, when applying for an internship or an exchange programme
- know how to update their portfolio and complement it, when applying for an internship or an exchange programme

05MUESTMUP Design drawing and presentation techniques: 3 ECTS

Learning outcomes
Students

- know how to create a professional, visual presentation using different techniques
- know how to produce detailed collections of presentation drawing of their designs
- know how to describe the possibilities and limitations of freehand and digital presentation techniques
- know how to assess their visual expression skills in relation to the basic professional level

05MUPIMA Drawing and painting: 3 ECTS

Learning outcomes
Students

- know how to use composition skills and how to apply them in professional assignments
- know how to recognise rhythm, tension, balance, variation and harmony in an image
- know how to recognise and test different image-making methods and materials
- know how to do self-assessment through expression based on observation

MI00AW71 Business English basics: 3 ECTS

Learning outcomes
The course provides skills that correspond to level B2 in the Common European Framework for Languages: "Can understand the main ideas of complex texts on both concrete and abstract topics, also in their field of specialisation. Can communicate with a degree of fluency and spontaneity that enables regular interaction with native speakers without strain for either party. Can produce clear, detailed text on a wide range of subjects and explain their opinion on a current issue, giving the advantages and disadvantages of various views."

The above description indicates the skill level, but it is based on objectives related to standard language.

The description is adapted for each professional field.

MIAMU16-1009 Advanced design process: 16 ECTS

Learning outcomes of the study module
Students

- know how to work according to the principles of the design process in use in the vehicle design industry
- know how to use computer-aided design in the design process
- know how to apply ideas of sculpture in product design
- know how to conduct research and development based on industrial and commercial goals
- know how to describe the evolutionary stages of the design industry and explain how the various stages are linked to the present day

05MUMUOPR2 Design process 2: 5 ECTS

Learning outcomes
Students

- know how to work in design processes using different methods
- know how to see design from different perspectives
- know how to assess their knowledge of materials and manufacturing technologies

05MUMALTYÖ Modelling as a tool: 5 ECTS

Learning outcomes
Students

- know how to explain the role of 3D modelling in their profession
- know how to compare different modelling techniques and file formats
- know how to use modelling concepts
- know how to use 3D software to create various models needed in design projects
- know how to produce 3D visualisations of modelled geometries

05MUPLAST1 Sculpture I: 3 ECTS

Learning outcomes
Students

- know how to discuss contemporary sculpture, using relevant concepts and expressive language
- know how to analyse and use shape, material, space, light and movement and their relationships in three-dimensional work
- know how to use the basic materials and working methods of sculpture
- know how to describe the relationship of mass and volume to people and the surrounding space

- know how to design exhibitions, and lighting for three-dimensional works

05MUMUOHIST History of design: 3 ECTS

Learning outcomes
Students

- know how to describe the periods, characteristics and pivotal representatives of Finnish and international design
- know how to analyse the key stages and characteristics of design history from the point of view of the professional field
- know how to establish the social factors that influence design and analyse the links between design and visual arts

MIAMU16-1010 Product development and the designer: 15 ECTS

Learning outcomes of the study module
Students

- know how to describe the principles of interaction between the client and the designer
- know how to analyse the information acquired for a design project
- know how to cooperate with various parties in product development
- know how to assess the prerequisites for outsourcing and procuring products
- know how to appropriately use computer-aided design at different stages of the design process
- know how to find information about the various forms of business and the special characteristics of entrepreneurship in design

05MUTUOKEPR Product development project: 8 ECTS

Learning outcomes
Students

- know how to work according to the principles of product development processes
- know how to work according to the design process in doing product development for a project, implemented with a business partner
- know how to create a project plan and schedule a project
- know how to communicate by sharing information and by using the strengths of teamwork
- know how to explain the importance of overall management in project work

05MULUOVAYR Entrepreneurship in the creative industry: 3 ECTS

Learning outcomes
Students

- know how to explain the personal characteristics required for running a business in the creative industry
- know how to assess their strengths and development areas in working as an entrepreneur
- know how to compare different forms of business, and describe the fundamentals of responsibility,

ownership and taxation that influence the selection of a form of business
- know how to list methods of user-driven marketing for a product or service provided by a creative business
- know how to use a company's profitability figures
- know how to assess business ideas and their profitability in the creative industry
- know how to create a preliminary business plan
- know how to assess a business idea and related business model

05MUTIESUVA Computer-aided design and manufacturing: 4 ECTS

Learning outcomes
Students

- know how to use 3D modelling in their professional field
- know how to create concrete objects from a digital model, using different methods
- know how to use various computer-aided manufacturing techniques
- know how to use the most common rapid manufacturing techniques, equipment and materials
- know how to cooperate with the manufacturing industry to manufacture models

MIAMU16-1011 Professional profile: 15 ECTS

Learning outcomes of the study module
Students

- know how to assess the importance of product development for the business strategy of a company
- know how to assess the importance of design as a strategic tool and its influence on a company's business
- know how to create a plan to develop their professional profile
- know how to use the methods of futures research and explain the importance of futures research in the work of a designer
- know how to act and make decisions in multidisciplinary operating environments

05MUMUIDEN Designer identity: 5 ECTS

Learning outcomes
Students

- know how to explain the importance of developing their professional profile and identity to progress into employment and further studies
- know how to develop a professional profile as a designer
- know how to assess the influence of various operational environments and their special characteristics on a designer's work
- know how to assess the influence of design on a company's business

05MUSTRAMU Strategic design: 5 ECTS

Learning outcomes

Students

- know how to explain the role of design as a strategic factor in business
- know how to assess the importance of organising design and the related operational models
- know how to observe and recognise the varying practices of design

05MUTUTU Futures research: 5 ECTS

Learning outcomes
Students

- know how to use the principles of futures research as part of the design process
- know how to analyse and anticipate consumer needs and operational environments based on information from futures research
- know how to use information from futures research on weak signals
- know how to create various scenarios to assess the importance and influence of future changes on a company's operational strategy

MIAMU16-1012 Advanced professional studies: 15 ECTS

Learning outcomes of the study module
Students

- know how to choose a research method
- know how to conduct background research for a design project
- know how to report the results of their background research
- know how to assess the importance of self-regulation skills for project success
- know how to choose suitable means of communication for a project
- know how to create expert materials to support decision-making in cooperation projects
- know how to assess their time management in the various stages of a project
- know how to work in a team of experts and as an expert in various cooperation projects

05MUASIAPRO Expert project: 7 ECTS

Learning outcomes
Students

- know how to work in a team of experts
- know how to carry out a comprehensive design process as a member of a team of experts
- know how to plan and implement an independent product development project
- know how to create a project plan
- know how to work as a design expert in a cooperation project
- know how to manage project communications

05MUSYAJOMT Advanced manufacturing technology, model-building techniques for vehicle design: 5 ECTS

Learning outcomes

Students

- know how to describe and use model-building techniques for vehicle design
- know how to find suitable model-building techniques for the various phases of the vehicle design process
- know how to optimally use design software for the design and manufacture of models and end products
- know how to build a model with a fibreglass shell

05MUTKMOPIT Research and development methods: 3 ECTS

Learning outcomes
Students

- know how to use key theories of design research in development and research
- know how to act according to the principles of reliability and ethicality
- know how to acquire research data
- know how to write well-argued formal text

MIAMU16-1015 PROFESSIONAL PRACTICE: 30 ECTS

Learning outcomes of the study module
Students

- know how to observe and identify workplace practices
- know how to assess their competencies in relation to the requirements of working life
- know how to make a plan to develop their competencies
- know how to manage real-life work situations and tasks that the degree qualifies them to do
- know how to develop their special competencies to prepare them for expert tasks in the field

05MUERIH Specialisation practice: 15 ECTS

Learning outcomes
After the practice period, students

- know how to assess their special competencies in relation to the practical requirements of working life
- know how to systematically develop their professional skills
- know how to work jobs in their field of specialisation
- know how to describe their extended professional network
- know how to interact with people and organisations in working life

05MUTEH Professional practice: 15 ECTS

Learning outcomes
After the practice period, students

- know how to assess their competencies in relation to the practical requirements of working life

- know how to plan their specialisation track according to the requirements of their professional field
- know how to work jobs in their field of study
- know how to develop their professional network

MIAMU16-1016 THESIS: 15 ECTS

Learning outcomes of the study module
Students

- know how to work according to the design process in their professional field and related professional practices
- know how to express themselves visually and in writing
- know how to gather information using a variety of means and exercising source criticism
- know how to use the design and research methods of their professional field in their thesis

05MUOPN Thesis: 15 ECTS

Learning outcomes
Students

- know how to work according to the design process in their professional field and related professional practices
- know how to express themselves visually and in writing
- know how to gather information using a variety of means and exercising source criticism
- know how to use the design and research methods of their professional field in their thesis

MIAMU16-1017 COMPLEMENTARY COMPETENCIES: 30 ECTS

MIAMU16-1018 OTHER PROFESSIONAL STUDIES: 15 ECTS

05MUKÄYTSU User interface design: 5 ECTS

Learning outcomes
Students

- know how to design a graphical user interface
- know how to use software for user interface design

05MUERIRYS Design for special groups: 5 ECTS

05MUAJOESIT Presentation techniques in vehicle design: 5 ECTS

Learning outcomes
Students

- know how to create vehicle design-related presentations using different techniques

- know how to use simple animations in presentations
- know how to construct a professional digital presentation
- know how to follow the principles of good presentation

MIAMU16-1019 ELECTIVE STUDIES: 15 ECTS