University of Applied Sciences Windesheim

Course Catalogue Engineering and ICT

EXCHANGE PROGRAMME

ALL-ROUND DESIGNER 2020-2021

Description of the educational unit				
Course code: EDDIP.18.V.01	Credits: **3** Ec's		Target group: **Voltijd Regulier**	
Description	Designing Interactive Products			
Competences	-			
Target group	The aim of this course is to provide students with the tools, knowledge and skills for designing and prototyping interactive products.			
Educational content	The following subjects will be discussed: • User-product interaction / Interaction Design • User experience • Sensors and actuators • Programming Arduino • Prototyping Students will create an interactive prototype taking the subjects above into account.			
Teaching methods	Lessons, workshops and coaching.			
Teaching aids	• Tutorials • Workshop • Arduino sets • Arduino project book			
Supervisory activity	Frontal class teaching and coaching.			
Sequentiality				
Level	Gevorderd (Advanced)			
Grading domain	1 t/m 10, 1 dec.			
Assesment	Sub assessment	Gradingdomain	Weight	Caesura
	P1: Designing Interactive Products	1 t/m 10, 1 dec.	1	Higher or equal to 5.5
Reading list				
Practical actions				

Description of the educational unit				
Course code: EDINW.20	Credits: **2** Ec's		Target group: **Voltijd Regulier**	
Description	International Workshop			
Competences	-			
Target group	Undertake a real life, one week, project with an international group of students who take part in the carrousel project. The objective is to create a tangible project result in a very short time in an international context.			
Educational content	The project undertaken will be a project as assigned by an external client. Generally this project will be more in the conceptual phase of a product development project.			
Teaching methods	Project			
Teaching aids	Everything that is needed			
Supervisory activity	Coaching by IPO staff and briefing and evaluation by the client.			
Sequentiality				
Level	Gevorderd (Advanced)			
Grading domain	Achieved / not achieved			
Assesment	Sub assessment	Gradingdomain	Weight	Caesura
	P1 International Workshop	Achieved / not achieved	1	Higher or equal to 5.5
Reading list				
Practical actions				

Description of the educational unit				
Course code:	EDOSMAD1.20	Credits:	**2** Ec's	Target group: **Voltijd Regulier**

Description	Open subject Allround Design 1
Competences	-
Target group	The students is free to choose an activity or subject that fits/is relevant to the general purpose of the minor Allround Designer. The choice of the student must be approved by the minor coach.
Educational content	Free project or subject. Students have a free choice as long as the topic is related to the Minor Allround Designer. The students make a proposal which must be approved by the coach. No past activties bare allowed. Hobby projects are excluded.
Teaching methods	Project with coaching.
Teaching aids	Everything that is needed.
Supervisory activity	Coaching
Sequentiality	
Level	Gevorderd (Advanced)
Grading domain	Achieved / not achieved

Assesment	Sub assessment	Gradingdomain	Weight	Caesura
	P1 Open subject MAD 1: projects	Achieved / not achieved	1	Higher or equal to 5.5

Reading list	
Practical actions	

Description of the educational unit				
Course code:	EDOSMAD2.20	Credits:	**9** Ec's	Target group: **Voltijd Regulier**

Description	Open subject Allround Design 2
Competences	-
Target group	The students is free to choose an activity or subject that fits/is relevant to the general purpose of the minor Allround Designer. The choice of the student must be approved by the minor coach.
Educational content	Free project or subject. Students have a free choice as long as the topic is related to the Minor Allround Designer. The students make a proposal which must be approved by the coach. No past activties bare allowed. Hobby projects are excluded.
Teaching methods	Project with coaching.
Teaching aids	Everything that is needed.
Supervisory activity	Coaching
Sequentiality	
Level	Gevorderd (Advanced)
Grading domain	Achieved / not achieved

Assesment	Sub assessment	Gradingdomain	Weight	Caesura
	P1 Open subject MAD 2: projects	Achieved / not achieved	1	Higher or equal to 5.5

Reading list	
Practical actions	

Description of the educational unit					
Course code:	EDPADENG.18.V.01	Credits:	**21** Ec's	Target group: **Voltijd Regulier**	
Description	Project Allround Designer: Engineering				
Competences	BoE3 Realiseren BoE2 Ontwerpen BoE1 Analyseren BoE5 Managen BoE4 Beheren BoE7 Onderzoeken BoE8 Professionaliseren BoE6 Adviseren				
Target group	The objective of this project is to have the students execute as independently as possible a full scale design process in order to prepare them further for their professional situation. The aim of this project is that when the student successfully completes this project he will have more in depth knowledge and experience in designing a product in the line of the curriculum paths "Working" and "Making".				
Educational content	The project focuses on the working and the making of a product. Subjects that are part of the process are; • Biomimicry • Functional testing • Factory excursions (self organised) and design rules of production techniques • Mechanical strength analysis				
Teaching methods	Project activities, lectures and workshops.				
Teaching aids	Everything that is needed for the project and that can be made available.				
Supervisory activity	Coaching				
Sequentiality					
Level	Bachelor = NLQF 6				
Grading domain	1 t/m 10, 1 dec.				
Assesment	Sub assessment	Gradingdomain	Weight	Caesura	
	P1 Project Allround Designer Engineering: Project grading	1 t/m 10, 1 dec.	1	Higher or equal to 5.5	
	P2 Project Allround Designer Engineering: Biomimicry	Achieved / not achieved	0	Higher or equal to 5.5	
	P3 Project Allround Designer Engineering: Functional testing	Achieved / not achieved	0	Higher or equal to 5.5	
	P4 Project Allround Designer Engineering: Excursions & Design rules	Achieved / not achieved	0	Higher or equal to 5.5	
	P5 Project Allround Designer Engineering: Mechanical Strength Analysis	Achieved / not achieved	0	Higher or equal to 5.5	
Reading list					
Practical actions					

Description of the educational unit				
Course code:	EDPADI.18.V.01	Credits:	**21** Ec's	Target group: **Voltijd Regulier**

Description	Project Allround Designer: Innovation
Competences	BoE3 Realiseren BoE2 Ontwerpen BoE1 Analyseren BoE5 Managen BoE4 Beheren BoE7 Onderzoeken BoE8 Professionaliseren BoE6 Adviseren
Target group	The objective of this project is to have the students execute as independently as possible a full scale design process in order to prepare them further for their professional situation. The aim of this project is that when the student successfully completes this project he will have more in depth knowledge and experience in designing a product in the line of the curriculum path "Selling".
Educational content	The project focuses on Innovation. Subjects that are part of the process are; • Advanced marketing • Innovation Method Management • Business Strategy • Market Research
Teaching methods	Project activities, lectures and workshops.
Teaching aids	Everything that is needed for the project and that can be made available.
Supervisory activity	Coaching
Sequentiality	
Level	Bachelor = NLQF 6
Grading domain	1 t/m 10, 1 dec.

Assesment

Sub assessment	Gradingdomain	Weight	Caesura
P1 Project Allround Designer Innovation: project grading	1 t/m 10, 1 dec.	1	Higher or equal to 5.5
P2 Project Allround Designer Innovation: Advanced Marketing	Achieved / not achieved	0	Higher or equal to 5.5
P3 Project Allround Designer Innovation: Innovation Method Management	Achieved / not achieved	0	Higher or equal to 5.5
P4 Project Allround Designer Innovation: Business Strategies	Achieved / not achieved	0	Higher or equal to 5.5
P5 Project Allround Designer Innovation: Market Research	Achieved / not achieved	0	Higher or equal to 5.5

Reading list	
Practical actions	

Description of the educational unit				
Course code:	EDPADPE.18.V.01	Credits:	**21** Ec's	Target group: **Voltijd Regulier**

Description	Project Allround Designer: Product Experience
Competences	BoE3 Realiseren BoE2 Ontwerpen BoE1 Analyseren BoE5 Managen BoE4 Beheren BoE7 Onderzoeken BoE8 Professionaliseren BoE6 Adviseren
Target group	The objective of this project is to have the students execute as independently as possible a full scale design process in order to prepare them further for their professional situation. The aim of this project is that when the student successfully completes this project he will have more in depth knowledge and experience in design a product in the line of the curriculum path "product experience".
Educational content	The project focuses on product experience. Subjects that are part of the process are; • Consumer Experience • Meaningful Design • Design Research • Product Context
Teaching methods	Project activities, lectures and workshops.
Teaching aids	Everything that is needed for the project and that can be made available.
Supervisory activity	Coaching
Sequentiality	
Level	Bachelor = NLQF 6
Grading domain	1 t/m 10, 1 dec.

Assesment

Sub assessment	Gradingdomain	Weight	Caesura
P1 Project Allround Designer product experience: project grading	1 t/m 10, 1 dec.	1	Higher or equal to 5.5
P2 Project Allround Designer product experience: Consumer Experience	Achieved / not achieved	0	Higher or equal to 5.5
P3 Project Allround Designer product experience: Product Research	Achieved / not achieved	0	Higher or equal to 5.5
P4 Project Allround Designer product experience: Meaningful Design	Achieved / not achieved	0	Higher or equal to 5.5
P5 Project Allround Designer product experience: Product Context	Achieved / not achieved	0	Higher or equal to 5.5

Reading list	
Practical actions	

Description of the educational unit					
Course code:	EDPL.16.V.01	Credits:	**2** Ec's	Target group:	**Voltijd Regulier**

Description	Professional Life
Competences	-
Target group	This subject is part of the curriculum of the minor all round design which aims at preparing students on a professional life as a general designer. The course gives a multi sided view of the profession. Many students will work for smaller companies or will start their own bureau. For the latter the utility of this course is obvious. Also when working in a smaller company the student will be confronted with all aspects of a business. This course will give a first glimpse of what is important and what aspects are to be dealt with in small businesses. During the course there will be opportunities to discuss about actual developments in the business.
Educational content	The course will deal with the main subject "starting as a professional designer": - The design office - A professional Linked in page - Your portfolio - Choosing a job - Applying for a job - Pitching - Meeting alumni - Protecting your ideas - Networking - Website setup - start up subsidies
Teaching methods	• Classroom lessons and individual assignments
Teaching aids	• Usual AV means
Supervisory activity	• Coaching of the assignments.
Sequentiality	See the entry requirements of the students' statute (SNS) of Industrial Design. Foreign students must have proven advanced knowledge of industrial design.
Level	Gevorderd (Advanced)
Grading domain	1 t/m 10, 1 dec.

Assesment

Sub assessment	Gradingdomain	Weight	Caesura
P1 Professional life	1 t/m 10, 1 dec.	1	Higher or equal to 5.5

Reading list	Kitty de Jong e.a. (2010). *For the Dutch students: Handboek voor het opzetten van een ontwerppraktijk.*. Amsterdam: Bisiness
Practical actions	

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EXCHANGE PROGRAMME
APPLIED MECHANICS 2020-2021

Description of the educationa unit				
Course code	EDAMCO.1	Credits	Ec's	Target group **o ti d e u ier**

Description	Composites
Competences	-
Target group	**Composites:** • Introduction to materials, production and applications of composites. • Introduction to basic calculation methods for stress and strain in composite materials.
Educational content	**Composites:** • Introduction to materials, production and applications of composites. • Introduction to basic calculation methods for stress and strain in composite materials.
Teaching methods	Lectures and Workshop
Teaching aids	Solidworks Cad and Solid Works Simulation Add-In, on laptop
Supervisory activity	Instruction and coaching
Sequentiality	
Level	Gevorderd (Advanced)
Grading domain	1 t/m 10, 1 dec.

Assesment	Sub assessment	Gradingdomain	Weight	Caesura
	T1 Composites	1 t/m 10, 1 dec.	1	Higher or equal to 5.5

Reading list	R.P.L.Nijssen (2013). *Composieten: Basiskennis*. Marknesse VKCN
Practical actions	

Description of the educationa unit				
Course code	EDAMMV.1	Credits	Ec's	Target group **o ti d e u ier**
Description	Modelling and Validation			
Competences	-			
Target group	**Mode in & a idation:** • Assessing actual Strength and Stability problems by combined application (1) Theoretical calculation models, (2) FEM-analysis models and (3) Testing.			
Educational content	**Mode in & a idation:** • Assessing actual Strength and Stability problems by combined application (1) Theoretical calculation models, (2) FEM-analysis models and (3) Testing.			
Teaching methods	Lectures and Workshop			
Teaching aids	Solidworks Cad and Solid Works Simulation Add-In, on laptop			
Supervisory activity	Instruction and coaching			
Sequentiality				
Level	Gevorderd (Advanced)			
Grading domain	1 t/m 10, 1 dec.			
Assesment	Sub assessment	Gradingdomain	Weight	Caesura
	P1 Modelling and Validation	1 t/m 10, 1 dec.	1	Higher or equal to 5.5
Reading list				
Practical actions	Experience lessons			

Description of the educationa unit				
Course code	EDAMPCOM4.1	Credits	**1** Ec's	Target group **o ti d e u ier**
Description	Professional communication			
Competences	-			
Target group	Acquire knowledge and develop skills in the field of oral and written communication.			
Educational content	Students choose two communication themes (out of four) in which they want to enhance their knowledge. Both themes are linked to oral and written communication.			
Teaching methods	Practical lectures during which the content is explained , after which it can be applied in exercises , assignments et cetera			
Teaching aids	Audiovisual aid			
Supervisory activity	Teaching, coaching			
Sequentiality				
Level	Gevorderd (Advanced)			
Grading domain	1 t/m 10, 1 dec.			
Assesment	Sub assessment	Gradingdomain	Weight	Caesura
	P1 Professionele Communicatie 4	1 t/m 10, 1 dec.	1	Higher or equal to 5.5
Reading list				
Practical actions				

Description of the educationa unit				
Course code	EDAMTE.20	Credits	**1** Ec's	Target group **o ti d e u ier**

Description	Technical English for Applied Mechanics
Competences	-
Target group	Technical English in the minor Applied Mechanics involves translating technical texts/sentences from Dutch into English. Furthermore the students are required to write a report in English of their project(approximately 15 pages).
Educational content	During lectures the writing skill is practised by summarizing and translating minor related texts.
Teaching methods	Training during lectures
Teaching aids	Reader
Supervisory activity	Coaching and feedback by mail
Sequentiality	Having successfully completed the first and second year courses
Level	Gevorderd (Advanced)
Grading domain	1 t/m 10, 1 dec.

Assesment

Sub assessment	Gradingdomain	Weight	Caesura
P1 Technical English for AM	1 t/m 10, 1 dec.	1	Higher or equal to 5.5
P2 Technical English for AM	1 t/m 10, 1 dec.	1	Higher or equal to 5.5

Reading list	
Practical actions	

Description of the educationa unit				
Course code	EDAT1E.16.V.01	Credits	Ec's	Target group **o ti d e u ier**

Description	Drive Technology 1
Competences	-
Target group	Basic knowledge about electrical drive systems Advanced knowledge about machinecomponents
Educational content	Machinecomponents 3 • Interference fit • couplings • bolt connections Elecrtical drive systems • Interaction motor and load • DC-motors • Steppermotors • AC-power • 3 phase systems • Induction motors
Teaching methods	• Lecture • Practical workshop
Teaching aids	• Energy lab • Pin on disk • Calculator
Supervisory activity	• Teaching at college and workshop hours
Sequentiality	Mathematics and physics at highschool level
Level	Gevorderd (Advanced)
Grading domain	1 t/m 10, 1 dec.

Assesment

Sub assessment	Gradingdomain	Weight	Caesura
P1 Drive Techn. 1 Lab work	Achieved / not achieved	0	Higher or equal to 5.5
T1 Drive Techn. 1 Machine components 3	1 t/m 10, 1 dec.	1	Higher or equal to 5.5
T2 Drive Techn. 1 Electrical drive systems	1 t/m 10, 1 dec.	1	Higher or equal to 5.5

Reading list	H. Wittel, D. Muhs, J. Vossiek, D. Jannasch (2013). *Roloff / Matek machineonderdelen - Theorieboek*. Den Haag Academic Service H. Wittel, D. Muhs, J. Vossiek, D. Jannasch (2013). *Roloff / Matek machineonderdelen - Tabellenboek*. Den Haag Academic Service Theodore Wildi (2013). *Electrical Machines, Drives and Power Systems*. Amsterdam Pearson Education
Practical actions	

Description of the educationa unit				
Course code	EDD.16.V.01	Credits	Ec's	Target group **o ti d e u ier**

Description	Designtools
Competences	-
Target group	Become acquainted with various design tools ,deepen and increase knowledge of two optional design tools
Educational content	During these practical lectures an overview of different design tools is given. After the introduction you have a choice of which design tools you would like to increase your knowledge. The minimum is two, but you may choose more. It concerns the following tools (they are examples ,the actual overview is provided in the course description every year). KISSOFT: a software tool which is used to calculate on machine – and engine parts. This package is leading in the field of gearwheel calculations. CE-marking: it deals with technical -and legal aspects, safety and liability concerning the construction of machines and products. Solid Works Motion/PDM: Motion is an extensive Multibody package which , among others, is used during the development or design of cars and rollercoasters. The practical lectures about Product Data Management are provided in cooperation with the company VMI. You acquire knowledge about important matters and recent developments in this area (specifically of interest for mechanical engineers). FMECA: During this part of the course a solid base is established for design methods and procedures to determine and to improve the reliability of machines. Failure mode, effects and criticality analysis deals with e.g. loads on contact surfaces, friction, wear and lubrication. Non-Linear FEM: during these practical lectures you not only learn to deal with distortions and non-linear material behaviour but with the limitations of conventional calculations as well.
Teaching methods	• Lectures • Practical workshops
Teaching aids	Various resources depending on the chosen design tools
Supervisory activity	• Teaching at college and workshop hours
Sequentiality	Second year mechanical engineering
Level	Gevorderd (Advanced)
Grading domain	1 t/m 10, 1 dec.

Assesment

Sub assessment	Gradingdomain	Weight	Caesura
P1 Designtools Introductions	Achieved / not achieved	0	Higher or equal to 5.5
P2 Designtool 1	1 t/m 10, 1 dec.	1	Higher or equal to 5.5
P3 Designtool 2	1 t/m 10, 1 dec.	1	Higher or equal to 5.5

Reading list	
Practical actions	

Description of the educationa unit				
Course code	EDD V.20	Credits	Ec's	Target group **o ti d e u ier**

Description	Dynamics and Vibration
Competences	-
Target group	• To provide the student with a clear and thorough presentation of topics in Engineering Dynamics such as; Relative Motion Analysis using using transulating and Rotating Axes, Coriolis acceleration, Linear and Angular Momentum of a Particle, Impact Mechanics and Linear and Angular Momentum of a Rigid Body. • To provide the student with a clear and thorough presentation of the theory and applications of Mechanical vibration.
Educational content	Quarter • Relative Motion Analysis using Rotating Axes, Coriolis acceleration • Linear and Angular Momentum of a Particle • Impact Mechanics • Linear and Angular Momentum of a Rigid Body • Basic concepts of vibration • Vibration analysis • Spring elements • Mass or inertia elements • Damping elements
Teaching methods	• Interactive Lectures • Company guest lecture
Teaching aids	• Weekly presentations • Problem list • Homework
Supervisory activity	• Lecturing • supervision
Sequentiality	
Level	Gevorderd (Advanced)
Grading domain	1 t/m 10, 1 dec.

Assesment	Sub assessment	Gradingdomain	Weight	Caesura
	T1 Dynamics and Vibration	1 t/m 10, 1 dec.	1	Higher or equal to 5.5

Reading list	Russell Charles Hibbeler (). *Engineering Mechanics Dynamics*. Pearson Education
Practical actions	

Description of the educationa unit				
Course code	EDPAM1.18.V.01	Credits	**6** Ec's	Target group **o ti d e u ier**
Description	Project Applied Mechanics			
Competences	-			
Target group	The project starts with an assignment of a company. The goal of the project is to provide a constructive solution for the analysed problems.			
Educational content	• Project assignment • Analyse and research a construction problem and providing a solution			
Teaching methods	Group assignment			
Teaching aids	• Books • Any resource			
Supervisory activity	Coaching			
Sequentiality				
Level	Gevorderd (Advanced)			
Grading domain	1 t/m 10, 1 dec.			
Assesment	Sub assessment	Gradingdomain	Weight	Caesura
	P1 Project Applied Mechanics	1 t/m 10, 1 dec.	1	Higher or equal to 5.5
Reading list				
Practical actions	Project uitgevoerd bij externe organisatie			

Description of the educationa unit				
Course code	EDRPAM.18.V.01	Credits	Ec's	Target group **o ti d e u ier**
Description	Report Project Applied Mechanics			
Competences	-			
Target group	The project starts with an assignment of a company. The goal of the project is to provide a constructive solution for the analysed problems.			
Educational content	• Project assignment • Analyse and research a construction problem and providing a solution			
Teaching methods	Group assignment			
Teaching aids	• Books • Any resource			
Supervisory activity	Coaching			
Sequentiality				
Level	Gevorderd (Advanced)			
Grading domain	1 t/m 10, 1 dec.			
Assesment	Sub assessment	Gradingdomain	Weight	Caesura
	P1 Report Project Applied Mechanics	1 t/m 10, 1 dec.	1	Higher or equal to 5.5
Reading list				
Practical actions				

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EXCHANGE PROGRAMME

Concept and Creation 2020-2021

Description of unit of study				
Course code	**ICT.KS.CC.V20**	Credits:	**24** ec	Target group: **Fulltime Regular**
Study unit Description	Concept & Creation			
Competences	-			
Target group	In this minor you will learn about: • developing a concept from scratch • applying your skills in a creative and flexible way • (social) media management • design thinking • deepening your skillset by diving into your field of expertise • information management (how to find the right tools to teach yourself online). After following this minor you will have learned what it means to: • deal with a multidisciplinary, internationally oriented community and project group • deal with real-life challenges of teamwork and group dynamics • use (technological) tools to become an expert in your field of study • start up a company • sell your own product • work together with other professionals for your company's benefit.			
Educational content	In this minor you will be one of the experts in your field of study; in your group you will even be seen as the expert in your field. You will assume the perspective of entrepreneurs in the start-up phase of a real business. This means you will face the challenges of a real multidisciplinary and internationally oriented business. The more energy, passion and time you put into your concept, the more you will learn about making it in the real world. Of course you can learn skills from another fields too, if you choose to challenge yourself. If so, you need to take an active role in pursuing your goals. This minor is all about autonomy; you are the director of your own learning cycle. Students enrolled in this minor will select two Professional Skills (3ECTS each course) from our list of elective courses (Leadership, Financial Management, etc.)			
Teaching methods	• Groups work on their group projects in a community setting • Intervision in different expertise groups • Dragons' Den • Presentations • Knowledge Lectures • Workshops • Presentation at Winnovation			
Teaching aids	BYOD: a laptop is mandatory. Freely-accessible learning materials are used.			
Supervisory activity	Students are coached on project approach in their project groups on a weekly basis. Workshops will contribute to the project's needs.			
Level	Gevorderd (Advanced)			
Grading domain	1 t/m 10, 1 dec.			
Assessment	Sub assessment	Grading domain	Weight	Caesura
	A - Portfolio	1 t/m 10, 1 dec.	1	Higher or equal to 5.5
	Professional attitude	1 t/m 10, 1 dec.	0	Higher or equal to 5.5
Reading list				

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EXCHANGE PROGRAMME

Data-driven Innovation 2020-2021

Description of unit of study				
Course code	**ICT.KS.DDI.V20** Credits: **24** ECTS credits Target group: **Fulltime Regular**			
Study unit Description	Data Driven Innovation			
Competences	-			
Target group	Data-driven Innovation focuses on aligning Business and IT, preparing a company for the digital future, using data. Data that is already present at the company, in some cases combined with external data. Data-driven Innovation is a structural change in the way an organization can add value to its customers. It is a turning point in thinking about how an organization uses technology to re-establish processes. It changes the business model and therefore offers new opportunities. Organizations need to adapt to this change by focusing on optimizing the customer's gain, control and retention. Processes can be redesigned, just as marketing, production and sales. And that also creates needs for a new policy on security, privacy and ethics. This is more and more controlled based on data-driven insights. But it also offers new possibilities in terms of learning and prediction. You obtain advanced knowledge about project management, creating business solutions and doing research, while working on a project for a customer. You work with data, sometimes to recognize patterns, sometimes to forecast, sometimes to organize a datalab, or…. There are many options, but data-driven innovation is the key.			
Educational content	Data-driven Innovation projects can vary considerably. In Data-driven Innovation, every project is different, which means that the learning opportunities can vary as well. It is up to the student how you choose to shape your semester. To help the students with their projects, a number of workshops can be attended. Some of them are obligatory (e,g., project management, planning), others are elective (scrum, game design etc.). The workshops are not graded individually, but are aimed to contribute to the success of the specific projects. Students enrolled in this minor will select two Professional Skills (3ECTS each course) from our list of elective courses (Leadership, Financial Management, 7 Habits etc.) Some examples of content are: Organizing and setting up a datalab; Forcasting production based on data of the past; Machine learning; Business Process Redesign; Integration of several different systems and applications; Using data to predict the effect of climatological issues; Formulating a(n) (renewed) IT strategy and policy; Dealing with and effects of the GDPR for the organisation; IT architecture or application management.			
Teaching methods	Students work on a large project for 20 weeks. The project is done for actual client or in a real-life setting. The multidisciplinary student teams of 3 to 5 students work on the project for 32 hours every week (Tuesday to Friday) at school or at the client's location. As part of the project there are project coaching sessions, workshops contributing to your project and regular presentations in which students share their obtained knowledge and progress. The professional skills are scheduled on Mondays. Therefore students will need to be available from Monday to Friday during this semester.			
Teaching aids	Only freely-accessible learning materials are being used. When specific hardware of software is needed for your project, this will be provided. Sometimes a client has specific software. Use of it, and the conditions, will be discussed with the client.			
Supervisory activity	Students are coached in their project groups on a weekly basis. Workshops will contribute to the project's needs.			
Level	Gevorderd (Advanced)			
Grading domain	1 t/m 10, 1 dec.			
Assessment	Sub assessment	Grading domain	Weight	Caesura
	Portfolio	1 t/m 10, 1 dec.	1	Higher or equal to 5.5
	Professional Attitude	Not achieved / Achieved	0	Higher or equal to 5.5
Reading list				

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EXCHANGE PROGRAMME

Future Technology 2020-2021

MajorH:	MH.ICT.KSFT.V20

Description of unit of study				
Course code	**ICT.KS.FT.V20**	Credits:	**24** ec	Target group: **Full time Regular**

Study unit Description	Future Technology
Competences	-
Target group	In Future Technology you learn, in various phases to investigate the possibilities of new technologies and work on new applications using technology. Conducting research, developing proof-of-concepts and/or building prototypes form a substantial part of most projects. Future Technology is one of the elective semesters of HBO-ICT. In these semesters, you learn to participate in projects in a professional working environment. This is done in multidisciplinary teams for actual client or a real-life setting. In this way, you learn from the professional environment, as well as other disciplines in the project. The feedback, evaluation and supervision focuses on preparing students as much as possible for the final graduation phase of the study programme.
Educational content	The Future Technology projects can vary considerably. Examples are developing new hardware devices, the optimization of business processes using technology or the deployment of new technology and/or new applications. Every project is different, which means that the learning opportunities can vary as well. In Future Technology, every project is different, which means that the learning opportunities can vary as well. It is up to you how you choose to shape your semester. To help the you with your project, a number of workshops can be attended. Some of them are obligatory (e,g., project management, research set-up), others are elective (scrum, design thinking). The workshops are not graded individually, but are aimed to contribute to the success of the specific projects. As a student enrolled in this minor, you will select two Professional Skills (3ECTS each course) from our list of elective courses (Leadership, Financial Management, 7 Habits etc.)
Teaching methods	You work on a large project for 20 weeks. The project can have an organisation as client or be initiated by a curious student or lecturer. The multidisciplinary student teams of 3 to 5 students work on the project for 32 hours every week (Tuesday to Friday) at school or at the client's location. As part of the project there are project coaching sessions, workshops contributing to your project and regular presentations in which students share their obtained knowledge and progress. The professional skills are scheduled on Mondays. Therefore students will need to be available from Monday to Friday during this semester.
Teaching aids	Only freely-accessible learning materials are being used. When specific hardware of software is needed for your project, this will be provided.
Supervisory activity	Students are coached in their project groups on a weekly basis. Workshops will contribute to the project's needs.
Level	Gevorderd (Advanced)
Grading domain	1 upto and including 10, 1 dec.

Assessment

Sub assessment	Grading domain	Weight	Caesura
Portfolio Assessment	1 t/m 10, 1 dec.	1	Higher or equal to 5.5
Professional Attitude	Not achieved / achieved	0	Higher or equal to 5.5

Reading list	

University of Applied Sciences
Windesheim

Course Catalogue Engineering and ICT

EXCHANGE PROGRAMME

Game Studio 2020-2021

Description of unit of study				
Course code	**ICT.KS.GS.V20**	Credits: **24** ec	Target group: **Fulltime Regular**	
Study unit Description	Game Studio			
Competences	-			
Target group	The semester Game Studio can be seen as an internship at Windesheim's own game studio, 038Games. At 038Games, students from different disciplines (such as IT, art, design) design and implement (serious) games for actual clients. These clients have a problem which they think could be solved using a game. It is up to the students to come up with various designs for this game and implement one of them to at least a working prototype. Game Studio is one of the elective semesters of HBO-ICT. In these semesters, students learn to participate in projects in a professional working environment. This is done in multidisciplinary teams for actual client or a real-life setting. In this way, students learn from the professional environment, as well as other disciplines in the project. The feedback, evaluation and supervision focuses on preparing students as much as possible for the final graduation phase of the study programme.			
Educational content	The projects in Game Studio can range from escape rooms, to mobile games, VR, et cetera. Mostly, the type of game that has to be developed is not decided on yet. In Game Studio, every project is different, which means that the learning opportunities can vary as well. It is up to the student how you choose to shape your semester. To help the students with their projects, a number of workshops can be attended. Some of them are obligatory (e,g., project management, planning), others are elective (scrum, game design). The workshops are not graded individually, but are aimed to contribute to the success of the specific projects. Students enrolled in this minor will select two Professional Skills (3ECTS each course) from our list of elective courses (Leadership, Financial Management, 7 Habits etc.)			
Teaching methods	Students work on a large project for 20 weeks. The project is done for actual client or in a real-life setting. The multidisciplinary student teams of 3 to 5 students work on the project for 32 hours every week (Tuesday to Friday) at school or at the client's location. As part of the project there are project coaching sessions, workshops contributing to your project and regular presentations in which students share their obtained knowledge and progress. The professional skills are scheduled on Mondays. Therefore students will need to be available from Monday to Friday during this semester.			
Teaching aids	Only freely-accessible learning materials are being used. When specific hardware of software is needed for your project, this will be provided.			
Supervisory activity	Students are coached in their project groups on a weekly basis. Workshops will contribute to the project's needs.			
Level	Gevorderd (Advanced)			
Grading domain	1 t/m 10, 1 dec.			
Assessment	Sub assessment	Grading domain	Weight	Caesura
	Portfolio	1 t/m 10, 1 dec.	1	Higher or equal to 5.5
	Professional attitude	Not achieved / achieved	0	Higher or equal to 5.5
Reading list				

University of Applied Sciences
Windesheim

Course Catalogue Engineering and ICT

EXCHANGE PROGRAMME

Games Programming 2020-2021

Major H:	MH.ICT.KSGP.V20

Description of unit of study				
Course code	**ICT.GP.CG.V20**	Credits: **Regular**	**5** ECTS credits	Target group: **Fulltime**

Study unit Description	Computer Graphics
Competences	-
Target group	Almost every game is played in a graphical two- or three-dimensional space. In this course you will learn how to create these environments. The theoretical basis will be covered, as well as practical implementation using OpenGL and other libraries. With the help of these libraries you can manipulate objects in space and change their look and feel with respect to the material the object is made of.
Educational content	Topics: • Shaders • Transformations • Texture Mapping • 3D Modeling • Theoretical and mathematical background • CPU vs GPU
Teaching methods	• Lectures and labs (combined) • Assignments in pairs
Teaching aids	See Electronic Learning Environment.
Supervisory activity	• Explanation of theory • Practice implementation in classroom • Discussion and question answering
Level	Gevorderd (Advanced)
Grading domain	1 t/m 10, 1 dec.

Assessment

Sub assessment	Grading domain	Weight	Caesura
Final assignment	1 t/m 10, 1 dec.	70	Higher or equal to 5.5
Homework	1 t/m 10, 1 dec.	30	Higher or equal to 5.5

Reading list	

Description of unit of study				
Course code	**ICT.GP.CPP.V20**	Credits: **Regular**	**3** ECTS credits	Target group: **Fulltime**

Study unit Description	C++ Programming
Competences	-
Target group	Nowadays the game industry mostly works with sophisticated game engines, like the CryEngine or the Unreal Engine. To add functionality to the Unreal Engine, you have to program in C++. C++ is a widely-used programming language that is used in the gaming industry as well as in many other industries. C++ is different from programming languages like Java or C#, mainly because you are responsible for your own memory management. You will learn C++ Programming in a Windows environment.
Educational content	• Introduction C++ • Classes in C++ • Object orientation in C++ • Templates • STL Classes (IO streams, vectors, etc.) • Pointers & references • Usage of C++ in a Windows environment
Teaching methods	• Lectures • Labs • Assignments
Teaching aids	• Visual Studio 2015 • See "Electronic Learning Environment" (ELO)
Supervisory activity	Through digital media and oral communication
Level	Gevorderd (Advanced)
Grading domain	1 t/m 10, 1 dec.

Assessment

Sub assessment	Grading domain	Weight	Caesura
Lab exam	1 t/m 10, 1 dec.	1	Higher or equal to 5.5

Reading list	

Description of unit of study			
Course code **ICT.GP.PRJCT.V20**	Credits: **10** ECTS credits	Target group: **Fulltime Regular**	
Study unit Description	Game Project		
Competences	-		
Target group	You will create a (serious) game in a small group of fellow students.		
Educational content	You will have the option to choose between: • Designing and implementing your own game. • Creating a (serious) game for a real client. • Doing research into new technology and building a prototype game demonstrating the capabilities. • .. The project has to meet a number of criteria, and will be approved or disapproved by a lecturer. The project requires the use of challenging technology.		
Teaching methods	• Working in a project group • Workshops		
Teaching aids	See Electronic Learning Environment		
Supervisory activity	Through digital media and oral communication		
Level	Gevorderd (Advanced)		
Grading domain	1 t/m 10, 1 dec.		
Assessment	Sub assessment	Grading domain	Weight	Caesura
	Assessment	1 t/m 10, 1 dec.	1	Higher or equal to 5.5
Reading list			

Description of unit of study			
Course code **ICT.GP.AAI.V20**	Credits: **6** ECTS credits	Target group: **Fulltime Regular**	
Study unit Description	Game Algorithms and Artificial Intelligence		
Competences	-		
Target group	During this course students will learn about algorithms specifically for games and how to apply various artificial intelligence techniques to create intelligent computer players.		
Educational content	Some of the topics that will be covered are: • Generating and Solving Mazes • Backtracking Techniques • Minimax algorithm and Alfa-Beta Pruning • Path Planning • Steering Behaviours • State Machines • Goal-driven Behaviours • Fuzzy Logic		
Teaching methods	• Lectures • Labs • Assignments		
Teaching aids	See: Electronic Learning Environment		
Supervisory activity	Through digital media and oral communication		
Level	Gevorderd (Advanced)		
Grading domain	1 t/m 10, 1 dec.		
Assessment	Sub assessment	Grading domain	Weight	Caesura
	Assignment	1 t/m 10, 1 dec.	2	Higher or equal to 5.5
	Theory exam	1 t/m 10, 1 dec.	1	Higher or equal to 5.5
Reading list			

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EXCHANGE PROGRAMME

Mobile Solutions 2020-2021

Description of unit of study	
Course code **ICT.KS.MS.V20** Credits: **24** ec Target group: **Fulltime Regular**	
Study unit Description	Mobile Solutions
Competences	-
Target group	If you want to work with others on developing a ready-to-use native or hybrid iOS and/or Android app for actual clients. If you want to collaborate with students from different disciplines and with a variety of expertise. If you are willing to tackle problems that require a multidisciplinary solution. If you want to find and implement a solution for a real-life business assignment. Then the semester Mobile Solutions fits you perfect! The success of as app depends on a good architecture and technical development. It also involves carefully considered features, a good infrastructure, as well as that the application is designed in such a way that users have an optimal user experience. Together with the product owner and your team you specify the requirements. Once you have built a new feature, you will measure whether the intended goals have been met or not and tweak if necessary the application. You strive to realize an app that is in production by the client's company after the semester is accomplished: in Apple's app store and/or Google Play or in a private app store. **Open to all HBO students** Mobile Solutions is one of the elective broadening semesters of HBO-ICT. You learn to participate in a project in a professional and agile working environment. This is done in a multidisciplinary team with a real client. This semester is open for all HBO students who are interested in learning how-to develop an app. And that is more than only the technical part, amongst others topics like user-experience, commercial and legal aspects and privacy are at stake. In this way you will learn about the professional environment as well as from other disciplines in your project. The feedback, evaluation and supervision focuses on preparing you as much as possible for the final graduation phase of their study program.
Educational content	The projects in Mobile Solutions range from building a minimum viable product (MVP) from scratch to optimizing and expand an existing app. **You choose your project, team and technology stack** The assignments may vary in nature. You choose at the kick-off in which team, client and technology stack you will pursue your assignment. The technology stack can comprise native app development or hybrid using frameworks like Ionic or Xamarin. There are only two main requirements: it must be a mobile app and yield a working (prototype) product. Topics like requirements engineering, user experience research, legal aspects, security issues, marketing, data science, iterative and incremental development, testing, use of sensors are addressed during the assignment. As every project is different the learning opportunities can vary as well. It is up to you, supported by your Windesheim coach, how you choose to shape your semester. The assignment is mainly conducted at the client's premises and partly at the ICT Community at Windesheim. **Learning opportunities** To help you with your project a number of workshops are available. Some are obligatory (e,g. project management, consulting skills), others are elective (SCRUM, growth hacking, interview techniques, game design). The workshops are not graded individually, but are aimed to contribute to the success of the concerning project. During the semester you will participate in knowledge-sharing sessions. Thus to ensure that knowledge of innovative techniques is passed on to the other teams. Company visits and guest lectures might also be a part of this elective semester program. At the end of the semester you present your app at the Winnovation Expo.

Teaching methods	• Large project
	  • for actual client or in real-life setting
	  • 32-hours per week
	  • three to five students per team
	• Weekly coaching
	• Workshops and masterclasses contributing to your projects
	• Regular presentations in which students share their obtained knowledge

Teaching aids	Only freely-accessible learning materials are being used, see ELO (Electronic Learning Environment).
Supervisory activity	Students are coached in their project teams on a weekly basis.
Level	Gevorderd (Advanced)
Grading domain	1 t/m 10, 1 dec.

Assessment	Sub assessment	Grading domain	Weight	Caesura
	Portfolio-assessment	1 t/m 10, 1 dec.	1	Higher or equal to 5.5
	Professional attitude	Not achieved / Achieved	0	Higher or equal to 5.5
Reading list				
Practical actions	Project to perform with an External organisation			

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Course Catalogue Engineering and ICT

EXCHANGE PROGRAMME

Operational Management in Industry 2020-2021

Description of the educational unit

Course code: EDAPS.19 Credits: **4** Ec's Target group: **Voltijd Regulier**

Description	Advanced Planning & Scheduling
Competences	-
Target group	Objectives: *The student shows how to apply planning and scheduling as forms of decision-making to play an important role in manufacturing and services industries. Detailed course objectives: see study guide*
Educational content	Objectives: **Lectures Main topics** 1. Intro, MPC systems, S&OP, Manufacturing and Dispatching rules 2. Characteristics of service industries, Projec and CPM. 3. Scheduling: Programming, Shifting Bottlen Annealing, Tabu- and Beam Search 4. Interval scheduling, Reservation systems and time tabling 5. Economic Lot Scheduling 6. Personnel scheduling problems
Teaching methods	Contents: • Courses • Assignments
Teaching aids	No special tools needed
Supervisory activity	Coaching
Sequentiality	
Level	Gevorderd (Advanced)
Grading domain	1 t/m 10, 1 dec.

Assesment

Sub assessment	Gradingdomain	Weight	Caesura
T1 Advanced Planning & Schedule	1 t/m 10, 1 dec.	1	Higher or equal to 5.5

Reading list	Pinedo, Michael L. (). *Planning and Scheduling in Manufacturing and Services*. : Springer
Practical actions	

Description of the educational unit				
Course code:	EDCE.19 Credits: **4** Ec's			Target group: **Voltijd Regulier**
Description	Circular Economy			
Competences	-			
Target group	Traditionally we reckon the supply chain of a tangible product to be a network of different companies which are producing, handling and distributing this product; starting with the supplier of raw materials and ending at the end consumer. When the product's life cycle is over, its written off as waste. Circular economy is a new way of thinking, never considering a product's life cycle to be over, but brings back its components or materials back into the supply chain. It regards the supply chains as "closed loops".			
Educational content	In our classes Circular Economy we present and discuss the development of Circular Economy. These developments are: 1. Circular supplies or designs: using resources that are fully renewable, recyclable or biodegradable. 2. Recovering of resources: a company should be able to maximize the economic value of product return flows. 3. Prolonging the product life cycle: a company's production system should be focused on extending the lifecycle of products and assets. 4. Development of circular economy markets: collaboration among product users, either individuals or organizations, should be promoted. 5. Product as a service: Provides an alternative to the traditional model of "buy and own." Products are used by one or many customers through a lease or pay-for-use arrangement. Apart from this we introduce, discuss and work out the principles of LCA.			
Teaching methods	• Theory colleges • Working colleges: LCA.			
Teaching aids	• Book • Calculator			
Supervisory activity	• Theory colleges • Coaching of assignments during working colleges			
Sequentiality				
Level	Gevorderd (Advanced)			
Grading domain	1 t/m 10, 1 dec.			
Assesment	Sub assessment	Gradingdomain	Weight	Caesura
	T1 Circular Economy	1 t/m 10, 1 dec.	1	Higher or equal to 5.5
Reading list				
Practical actions	Practical skills lessons			

Description of the educational unit				
Course code:	EDOS.18.V.01	Credits: **4** Ec's		Target group: **Voltijd Regulier**
Description	Operations Strategy			
Competences	-			
Target group	Operations can operate in accordance with customer needs or because the company possesses specific competences. How can you produce products or services according to customer needs? Your customer demands a flexible product? What processes, technology and supply chain solutions are at your disposal to achieve optimal customer satisfaction? This is what you will learn during this course.			
Educational content	Operations can operate in accordance with customer needs or because the company possesses specific competences. How can you produce products or services according to customer needs? Your customer demands a flexible product? What processes, technology and supply chain solutions are at your disposal to achieve optimal customer satisfaction? This is what you will learn during this course.			
Teaching methods	Contents: • Courses • Assignments			
Teaching aids	No special tools needed			
Supervisory activity	Coaching			
Sequentiality				
Level	Gevorderd (Advanced)			
Grading domain	1 t/m 10, 1 dec.			
Assesment	Sub assessment	Gradingdomain	Weight	Caesura
	T1 Operations Strategy	1 t/m 10, 1 dec.	1	Higher or equal to 5.5
Reading list				
Practical actions				

Description of the educational unit			
Course code: EDPOMI.18.V.01	Credits: **12** Ec's		Target group: **Voltijd Regulier**
Description	Project Operational Management in Industry		
Competences	-		
Target group	Objectives: • Experience the challenges of an operational manager in a real life situation. • Experience the conflict of interest between short term targets and long term targets. • Analyze how the mission and vision of a company can be translated in a strategy and can be implemented in the days work. • To analyze these situations. • To reflect on this experience.		
Educational content	• This project is executed within a company or external organization. • The language is either Dutch or English depending upon the guest organization. • The project will normally be carried out in small groups. • Individual assignments are possible in relevant situations.		
Teaching methods	Assignments for an external organisation.		
Teaching aids	No special tools needed		
Supervisory activity	Coaching		
Sequentiality			
Level	Gevorderd (Advanced)		
Grading domain	1 t/m 10, 1 dec.		
Assesment	Sub assessment	Gradingdomain	Weight	Caesura
	P1 Proj. Oper. Management	1 t/m 10, 1 dec.	1	Higher or equal to 5.5
Reading list			
Practical actions	Project uitgevoerd bij externe organisatie		

Description of the educational unit			
Course code: EDSIMO.18.V.01	Credits: **4** Ec's		Target group: **Voltijd Regulier**
Description	Simulation Operational management in Industry		
Competences	-		
Target group	Simulation about different planning methods within a production facility.		
Educational content	Simulation about planning heuristics.		
Teaching methods	Cases		
Teaching aids	Book Plant Simulation software		
Supervisory activity	Workshops		
Sequentiality			
Level	Gevorderd (Advanced)		
Grading domain	1 t/m 10, 1 dec.		
Assesment	Sub assessment	Gradingdomain	Weight	Caesura
	P1 Simulation OMI	1 t/m 10, 1 dec.	1	Higher or equal to 5.5
Reading list			
Practical actions	Practical skills lessons		

Description of the educational unit				
Course code: EDTOMI.18.V.01	Credits: **2** Ec's		Target group: **Voltijd Regulier**	
Description	Thema Operational management in Industry			
Competences	-			
Target group	Supporting the theme Operational Management by facilitating consultation between students and to connect with company supervisors and supervising lecturers.			
Educational content	Guest lectures, team building			
Teaching methods	Interactive training and presentations			
Teaching aids	Not specified, depending on activities			
Supervisory activity	Consultation and coaching			
Sequentiality				
Level	Gevorderd (Advanced)			
Grading domain	Not achieved - achieved			
Assesment	Sub assessment	Gradingdomain	Weight	Caesura
	P1Thema OMI	Not achieved - achieved	1	Higher or equal to 5.5
Reading list				
Practical actions	Practical skills lessons			

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EXCHANGE PROGRAMME

PROCESS OPTIMIZATION 2020

Description of the educational unit				
Course code:	EDCM.19	Credits:	**4** Ec's	Target group: **Voltijd Regulier**

Description	Change Management
Competences	-
Target group	Objectives: • To gain an insight into the nature and complexity of organisational change and its effect on human capital. • To gain useful insights and courses of actions that will allow the student to design and implement change professionally • To develop leadership in change processes
Educational content	1. Importance of organisational change in organisations: -organisations in a dynamic world -why change is so difficult 2. The different ways of thinking about change in organisations 3. The main elements of planned change: - Diagnosis - Change strategy - The interventions - Communication - Sense making - Steering
Teaching methods	- lectures - practical lessons - individual and group assignments - reflection and coaching
Teaching aids	Smartboard
Supervisory activity	- 9 meetings / 2 hours per meeting
Sequentiality	
Level	Bachelor = NLQF 6
Grading domain	1 t/m 10, 1 dec.

Assessment

Sub assessment	Grading domain	Weight	Caesura
P1 Change management	1 t/m 10, 1 dec.	1	Higher or equal to 5.5
T1 Change management	1 t/m 10, 1 dec.	1	Higher or equal to 5.5

Reading list	Caluwé, L. , Vermaak, H. (2003). *Learning to change. A guide for organization Change agents.*. Thousand Oaks: Sage Publications, INc
Practical actions	

Description of the educational unit				
Course code:	EDLQRM.18.V.01	Credits:	**4** Ec's	Target group: **Voltijd Regulier**

Description	Lean/QRM			
Competences	-			
Target group	In many organizations numerous improvement projects are started. The projects tie up people for considerable amounts of time on top of their normal responsibilities. Each individual project assesses a current problem within the organization as a whole. The question is, is there also improvement in the bottom-line performance of the organization after completing a project. If there is no process to address the constraint in the organization, there is also no focus which areas should be addressed. In this course you will learn to setup a process to address the constraint in the organization and increase the performance of an organization as a whole.			
Educational content	1. Intro course 2. VSM future state 3. QRM basic principles 4. Guest speaker (3x) 5. Line balancing 6. Assignment coaching 7. Lego lean game			
Teaching methods	Colleges			
Teaching aids	Lean game			
Supervisory activity	Individual / group coaching			
Sequentiality				
Level	Gevorderd (Advanced)			
Grading domain	1 t/m 10, 1 dec.			
Assessment	Sub assessment	Grading domain	Weight	Caesura
	P1 Lean/QRM	1 t/m 10, 1 dec.	1	Higher or equal to 5.5
Reading list	Rajan Suri (2010). *Its About Time*. : CRC Press			
Practical actions	Practical Skills lessons			

Description of the educational unit				
Course code:	EDPPO.18.V.01	Credits:	**12** Ec's	Target group: **Voltijd Regulier**

Description	Project Process Optimization			
Competences	-			
Target group	The goal is to learn how to assess the quality of a business process and, using Lean / Six Sigma, to come up with improvements in a structured way and to implement these in an existing organisation, taking into respect company strategy, management and the work floor.			
Educational content	Doing research into the quality of a business process and to find improvements in a structured way.			
Teaching methods	Students work in small project groups on an improvement project in a company.			
Teaching aids	none specific			
Supervisory activity	Coaching and intervision			
Sequentiality				
Level	Gevorderd (Advanced)			
Grading domain	1 t/m 10, 1 dec.			
Assessment	Sub assessment	Grading domain	Weight	Caesura
	P1 Project Process Optimization	1 t/m 10, 1 dec.	1	Higher or equal to 5.5
Reading list				
Practical actions				

Description of the educational unit					
Course code:	EDSIM.15.V.01	Credits:	**4** Ec's	Target group:	**Voltijd Regulier**

Description	Simulation
Competences	-
Target group	Theory • To learn how to implement a simulation study for logistical purposes. • To recognize when simulation can be used as a tool for decision-making, especially for logistical problems in a manufacturing environment. • To be able to make simple calculations as a means of validating a simulation study. Practical • To acquire knowledge of simulation as a tool for decision support. • To practice to be able to use simulation while tackling logistical problems. • To learn how to work with the simulation software Enterprise Dynamics. • To learn how to interpret and analyze the results from a simulation study.
Educational content	Theory • simulation: what, why and when? • inside simulation software • simulation studies: an overview • conceptual modelling • developing the conceptual model • data collection and analysis • model coding • experimentation: obtaining accurate results • experimentation: searching the solution space • implementation • verification, validation and confidence Practical • tutorial layout • Enterprise Dynamics background • first contact with Enterprise Dynamics • model building basics • analyzing the results • playing with strategies After the introduction to Enterprise Dynamics the student will perform several case studies.
Teaching methods	• lectures • practical
Teaching aids	
Supervisory activity	Coaching
Sequentiality	

	Propaedeutics SED. See also the entry requirements of the student statute (SNS) of the School of Engineering & Design.
Level	Gevorderd (Advanced)
Grading domain	1 t/m 10, 1 dec.

Assessment	Sub assessment	Grading domain	Weight	Caesura
	P1 Simulation	1 t/m 10, 1 dec.	1	Higher or equal to 5.5

Reading list	
Practical actions	

Description of the educational unit

EDSX.17.V.01 Credits: **4** Ec's Target group: **Voltijd Regulier**

Description	Six Sigma
Competences	-
Target group	To use the Six Sigma methodology - Design, Measure, Analyse, Implement, Control - as a tool for improving processes.
Educational content	Design of Experiments, Failure Mode Effect Analysis.
Teaching methods	• lectures (Hoor/instructiecolleges) • seminars (werkcolleges)
Teaching aids	Calculator
Supervisory activity	Coaching (mondeling)
Sequentiality	Propaedeutics SED. See also the entry requirements of the student statute (SNS) of the School of Engineering & Design.
Level	Gevorderd (Advanced)
Grading domain	1 t/m 10, 1 dec.

Assessment	Sub assessment	Grading domain	Weight	Caesura
	T1 Six Sigma	1 t/m 10, 1 dec.	1	Higher or equal to 5.5

Reading list	Gitlow, Levine (2012). *Six Sigma for Green Belts and Champions*. Upper Saddle River, New Jersey, USA: Financial Times Press (Pearson)
Practical actions	

Description of the educational unit

Course code: EDTPO.18 Credits: **2** Ec's Target group: **Voltijd Regulier**

Description	Theme Process Optimization
Competences	-
Target group	Supporting the theme Process Optimization by facilitating consultation between students and to connect with company supervisors and supervising lecturers.
Educational content	Organizing excursions, guest lecturers, team building, study trip.
Teaching methods	interactive training and presentations
Teaching aids	not specified, depending on activities
Supervisory activity	consultation and coaching
Sequentiality	
Level	Gevorderd (Advanced)
Grading domain	Not achieved / achieved

Assessment	Sub assessment	Grading domain	Weight	Caesura
	P1	Not achieved / achieved	1	Higher or equal to 5.5

Reading list	
Practical actions	Practical Skills lessons

Description of the educational unit					
Course code:	EDTPO.18	Credits:	**2** Ec's	Target group:	**Voltijd Regulier**

Description	Theme Process Optimization			
Competences	-			
Target group	Supporting the theme Process Optimization by facilitating consultation between students and to connect with company supervisors and supervising lecturers.			
Educational content	Organizing excursions, guest lecturers, team building, study trip.			
Teaching methods	interactive training and presentations			
Teaching aids	not specified, depending on activities			
Supervisory activity	consultation and coaching			
Sequentiality				
Level	Gevorderd (Advanced)			
Grading domain	Not achieved / achieved			
Assessment	Sub assessment	Grading domain	Weight	Caesura
	P1	Not achieved / achieved	1	Higher or equal to 5.5
Reading list				
Practical actions	Practical Skills lessons			

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Course Catalogue Engineering and ICT

EXCHANGE PROGRAMME

Security Engineering 2020-2021

Description of unit of study				
Course code	**ICT.KS.SECENG.V20**	Credits:	**24** ec	Target group: **Voltijd Regulier**

Study unit Description	Security Engineering
Competences	-
Target group	In Security Engineering students learn, in various phases, in collaboration with actual clients, to investigate the possibilities and solutions in cybersecurity and work on new applications using procedures, protocols, tools and technology. Conducting research, developing proof-of-concepts and/or building prototypes form a substantial part of most projects. Security Engineering is one of the elective semesters of HBO-ICT. In these semesters, students learn to participate in projects in a professional working environment. This is done in multi-disciplinary teams for actual client or a real-life setting. In this way, students learn from the professional environment, as well as other disciplines in the project. The feedback, evaluation and supervision focuses on preparing students as much as possible for the final graduation phase of the study programme.
Educational content	The Security Engineering projects can vary considerably. Examples are developing security policies for government, researching and building a proof-of-concept for a secure mobile app delivery platform for the Dutch Police or the deployment of new technology and/or new applications for students.. In Security Engineering, every project is different, which means that the learning opportunities can vary as well. It is up to the student how he/she choose to shape the semester. To help the students with their projects, a number of workshops can be attended. Some of them are obligatory (e,g., project management, planning), others are elective (scrum, game design etc.). The workshops are not graded individually, but are aimed to contribute to the success of the specific projects. Students enrolled in this minor will select two Professional Skills (3ECTS each course) from our list of elective courses (Leadership, Financial Management, 7 Habits etc.)
Teaching methods	Students work on a large project for 20 weeks. The project is done for actual client or in a real-life setting. The multi- disciplinary student teams of 3 to 5 students work on the project for 32 hours every week (Tuesday to Friday) at school or at the client's location. As part of the project there are project coaching sessions, workshops contributing to your project and regular presentations in which students share their obtained knowledge and progress. The professional skills are scheduled on Mondays. Therefore students will need to be available from Monday to Friday during this semester.
Teaching aids	Only freely-accessible learning materials are being used. When specific hardware of software is needed for your project, this will be provided.
Supervisory activity	Students are coached in their project groups on a weekly basis. Workshops will contribute to the project's needs.
Level	Gevorderd (Advanced)
Grading domain	1 t/m 10, 1 dec.
Assessment	

Sub assessment	Grading domain	Weight	Caesura
Portfolio - assessment	1 t/m 10, 1 dec.	1	Higher or equal to 5.5
Professional attitude	Niet voldaan t/m Voldaan	0	Higher or equal to 5.5

Reading list	
Practical actions	Project uitgevoerd bij externe organisatie

University of Applied Sciences Windesheim

Course Catalogue Engineering and ICT

EXCHANGE PROGRAMME

Web & Analytics 2020-2021

Description of unit of study				
Course code	**ICT.KS.WA.V20**	Credits: **24** ECTS credits Target group: **Fulltime Regular**		
Study unit Description	Web and Analytics			
Competences	-			
Target group	In Web and Analytics students (re)design, implement and help improve the exploitation of a web application for actual clients. The success of a web application does not only depend on a good technical development, but also involves carefully considered features, a good infrastructure, as well as that the web application is designed in such a way that end users have an optimal experience achieving their business goals. Together with the client's product owner students will specify the goals and requirements of the web application. Once you have built a new feature, you will measure whether the intended goals have been met or not, and tweak the application or customer journey to further improve it. The students strive to realize a web app that can be used by the client's company after the semester is accomplished. Web and Analytics is one of the elective semesters of HBO-ICT. In these semesters, students learn to participate in projects in a professional and agile working environment. This is done in multidisciplinary teams for an actual client or a real-life setting. In this way, students learn about the professional environment, as well as other disciplines in the project. The feedback, evaluation and supervision focuses on preparing students as much as possible for the final graduation phase of their study program.			
Educational content	The projects and clients in Web and Analytics can range from building a minimum viable product (MVP) to optimizing an existing customer facing e-commerce platform. The assignments can vary considerably regarding the subject and contents. There is only one main requirement: at the end of the semester there must be a working web app realizing previous set business goals. Within the assignment there can be topics like requirement engineering, user research, legal aspects, security issues, marketing, data science and other challenges. In Web and Analytics, every project is different, which means that the learning opportunities can vary as well. It is up to the student how you choose to shape your semester. The assignment is mainly conducted at the client's premises and partly at the ICT Community at Windesheim. To help the students with their projects, a number of workshops can be attended. Some of them are obligatory (e,g., project management, planning), others are elective (Scrum, growth hacking, game design). The workshops are not graded individually, but are aimed to contribute to the success of the concerning project. During the semester, students lead knowledge-sharing sessions in which they present acquired knowledge to the rest of the class. In this way, we ensure that knowledge of innovative techniques is also passed on to the other teams. Company visits and guest lectures might also be a part of this elective semester program. Students enrolled in this minor will select two Professional Skills (3ECTS each course) from our list of elective courses (Leadership, Financial Management, 7 Habits etc.).			
Teaching methods	Students work on a large project for 20 weeks. The project is done for actual client or in a real-life setting. The multidisciplinary student teams of 3 to 5 students work on the project for 32 hours every week (Tuesday to Friday) at school or at the client's location. As part of the project there are project coaching sessions, workshops contributing to your project and regular presentations in which students share their obtained knowledge and progress. The professional skills are scheduled on Mondays. Therefore students will need to be available from Monday to Friday during this semester.			
Teaching aids	Only freely-accessible learning materials are being used, see ELO (Electronic Learning Environment).			
Supervisory activity	Students are coached in their project groups on a weekly basis. Workshops will contribute to the project's needs.			
Level	Gevorderd (Advanced)			
Grading domain	1 t/m 10, 1 dec.			
Assessment	Sub assessment	Grading domain	Weight	Caesura
	Portfolio Assessment	1 t/m 10, 1 dec.	1	Higher or equal to 5.5
	Professional Attitude	Niet voldaan t/m Voldaan	0	Higher or equal to 5.5
Reading list				

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EXCHANGE PROGRAMME

Circular Housing 2020-2021

CIRCULAR HOUSING

Description of the educational unit				
Course code: BT.ECH.V18	Credits: **3** Ec's		Target group: **Voltijd Regulier**	
Description	Engineering Circular Housing			
Competences	-			
Target group	Engineering of a building following the rules for circular economy, concentrated on buildings			
Educational content	In this course you will learn about sustainable and circular materials, constructions and MEP-equipment and use these knowledge to develop your project.			
Teaching methods	Lectures and workshops			
Teaching aids	Personal Computer (laptop), calculator			
Supervisory activity	Weekly lectures by lecturers and external experts			
Sequentiality				
Level	Gevorderd (Advanced)			
Grading domain	1 t/m 10, 1 dec.			
Assessment	Sub assessment	Grading domain	Weight	Caesura
	Assignment	1 t/m 10, 1 dec.	1	Higher or equal to 5.5
Reading list				
Practical actions				

Description of the educational unit				
Course code: BT.KOCH.V19	Credits: **1** Ec's		Target group: **Voltijd Regulier**	
Description	Kick Off Circular Housing			
Competences	-			
Target group	• Introduction to each other • Learning about each others expectations, skills and learning goals • Introduction to the main topics handled in the module			
Educational content	Introduction lecture(s), workshop(s)			
Teaching methods	Lecture(s), workshop(s), self study			
Teaching aids	According to course outline			
Supervisory activity	Lecturing and coaching			
Sequentiality				
Level	Gevorderd (Advanced)			
Grading domain	1 t/m 10, 1 dec.			
Assessment	Sub assessment	Grading domain	Weight	Caesura
	Assignment	1 t/m 10, 1 dec.	1	Higher or equal to 5.5
Reading list				
Practical actions				

Description of the educational unit				
Course code: BT.LECH.V18	Credits: **3** Ec's		Target group: **Voltijd Regulier**	
Description	Lectures & Excursions Circular Housing			
Competences	-			
Target group	Obtaining knowledge on the field of Circular Building Principles. You will improve your theoretical knowledge on the field of circular materials and circular building principles. Students can apply the obtained knowledge in the design project of the minor.			
Educational content	Lectures on Circular Building. During this module you get aquainted with subjects like circular construction and installation principles, the use of circular and biodgradable building materials, shadow costs, residual value and other relevant subjects on circular housing. Several of the lectures will be given bij external experts on the field of circular building. Field Trip As a reference and as an inspiration we will also visit several circular housing and building projects .			
Teaching methods	Lectures and Field Trips			
Teaching aids	Laptop, calculator, drawing materials, camera, pen, paper			
Supervisory activity	Lectures Lectures will be given at school in seminars of 2 hours each by our lectors and external experts. Field trip The field trip will be organised by students and guided by our tutors.			
Sequentiality				
Level	Gevorderd (Advanced)			
Grading domain	1 t/m 10, 1 dec.			
Assessment	Sub assessment	Grading domain	Weight	Caesura
	Portfolio	1 t/m 10, 1 dec.	1	Higher or equal to 5.5
Reading list				
Practical actions				

Description of the educational unit				
Course code: BT.PCH.V18	Credits: **6** Ec's		Target group: **Voltijd Regulier**	
Description	Project Circular Housing			
Competences	BK1 Initiate and managing			
Target group	You will learn to develop a building by designing and engineering based on circular principles			
Educational content	You will learn to interpretate a Programme of Requirements and to develope new insight by doing research to circular housing. You will use these knowledge to develope a circular building. • you can doing research using a method • you can design a building using a method • you can apply new insights and technics in your project • You can visualyse the (design-)solutions • You are able to make a BIM model and transfer data in a digital method • You are able to communicate clearly and comprehensible with all project partners (internal and external)			
Teaching methods	You will work as a project team, in which everyone has his own role with the tasks as there are in reality. There is a weekly supervision by the lecturers.			
Teaching aids	Computer, software (ArchiCad, Solibri, Enorm, MPG)			
Supervisory activity	You will work independently at the project. There is an external principal, who has formulated some requirements. You will take the initiative to communicate with project partners and the lecturers.			
Sequentiality				
Level	Gevorderd (Advanced)			
Grading domain	1 t/m 10, 1 dec.			
Assessment	Sub assessment	Grading domain	Weight	Caesura
	Assignment	1 t/m 10, 1 dec.	1	Higher or equal to 5.5
Reading list				
Practical actions				

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EXCHANGE PROGRAMME

Future Cities 2020-2021

FUTURE CITIES

Description of the educational unit				
Course code:	BT.KOFC.V19	Credits:	**1** ECTS	Target group: **Voltijd Regulier**
	credits			

Description	Kick Off Future Cities			
Competences	-			
Target group	• Introduction to each other • Learning about each other's expectations, skills and learning goals • Introduction to the main topics of the module Future Cities			
Educational content	Introduction lecture(s), excursion(s) and workshop(s)			
Teaching methods	Lecture(s), excursion(s), workshop(s), self study			
Teaching aids	According to course outline			
Supervisory activity	Lecturing and coaching			
Sequentiality				
Level	Gevorderd (Advanced)			
Grading domain	1 t/m 10, 1 dec.			
Assessment	Sub assessment	Grading domain	Weight	Caesura
	Assignments	1 t/m 10, 1 dec.	1	Higher or equal to 5.5
Reading list				
Practical actions				

Description of the educational unit				
Course code:	BT.LFT.V20	Credits:	**6 ECTS**	Target group: **Voltijd Regulier**
	credits			

Description	Lectures & Field Trip			
Competences	-			
Target group	Goals • Extending your professional knowledge on the field of density, climate change and energy transition of our present and future cities. • You will improve your professional knowledge about technological innovations in a broad interdisciplinary perspective (mobility, civil engineering and build environment).			
Educational content	Lectures on Future Cities. During this module several guest speakers, experts and specialists will give lectures regarding our (future) cities in a wide range of subjects as heat stress, water management, civil engineering, energy transition, habitability of our cities, new mobility, food production, system thinking and circular economy. Field Trip As a reference and as an inspiration we will go visit several sustainable projects in a European city of our choice. - You prepare the field trip and you make an excursion guide. - You go on field trip and present and reflect on this.			
Teaching methods	- Lectures will be given at school in 10 seminars of 2 hours each. - The Field Trip will be organised by the students themselves. Coaching lessons for preparation will be provided.			
Teaching aids	Laptop, internet, passport, travellbag, (video) camera, good pair of shoes			
Supervisory activity	Lectures Lectures will be given by several external professionals on different fields of interest. Field trip Coaching for the field trip and preparations will be provided by the tutors from Windesheim.			
Sequentiality				
Level	Gevorderd (Advanced)			
Grading domain	1 t/m 10, 1 dec.			
Assessment	Sub assessment	Gradingdomain	Weight	Caesura
	Magazine	1 t/m 10, 1 dec.	1	Higher or equal to 5.5

Reading list	(). *The costs for the field trip are not included in this minor* *Students should take into account that the costs will range between 300 and 400 euro* *If these costs are insumountable an alternative assignment can be provided*. :
Practical actions	

Description of the educational unit

Course code: BT.PFC.V19 Credits: **6 ECTS** Target group: **Voltijd Regulier**
credits

Description	Project Future Cities
Competences	-
Target group	Cooperation and co-making in a multidisciplinary international teams In this project the student is learning to work together in multidisciplinary teams. This project will give you tools to communicate and cooperate with other professionals Thinking out of the box and being creative In this course you are going to generate ideas / scenario's for a Future City which is not yet even there. A lot of creativity is needed. We are learning you to get used to think in new perspectives and to reach for multidisciplinary synergy. Extending your professional knowledge about sustainable cities You will improve your knowledge about sustainable cities and new technological innovations in your field of study.
Educational content	You will work in an interdisciplinary team of international students on an integral design project for a future city district in 2050. - In the first part of the project you will analyse and research future scenario's on specific theme's and issues. - In the second part of the project you will work on an integral design for a future city district in 2050 The project is connected with several local stakeholders. Final products will be discussed with them.
Teaching methods	You will be working at school in a workshop-like environment. The class will be mentored and coached by 3 different tutors, each with it's own field of expertise. Multiple didactic methods will be used.
Teaching aids	Laptop, internet, mobile phone or camera, sketching paper, drawing materials
Supervisory activity	We start with an introduction of the project. From then you work in small groups of 3-4 students on the project. A great amount of self study is expected. Coaching will be provided once a week during the project.
Sequentiality	
Level	Gevorderd (Advanced)
Grading domain	1 t/m 10, 1 dec.

Assessment

Sub assessment	Grading domain	Weight	Caesura
Review Part One	1 t/m 10, 1 dec.	3	Higher or equal to 5.5
Review Part Two	1 t/m 10, 1 dec.	7	Higher or equal to 5.5

Reading list	
Practical actions	

Description of the educational unit

Course code: BT.PRS.V13 Credits: **2** ECTS Target group: **Voltijd**
credits

Description	Professional Skills
Competences	-
Target group	An understanding of the communication in English, including interviewing and consultancy skills . The ability to analyse different situations and use adequate proficiency.
Educational content	An understanding of the communication in English, including interviewing and consultancy skills . The ability to analyse different situations and use adequate proficiency.
Teaching methods	workshops
Teaching aids	None
Supervisory activity	
Sequentiality	English from the first 2 years of the Bachelor study Civil Engineering. Or English certificate at B1 level.
Level	Gevorderd (Advanced)
Grading domain	1 t/m 10, 1 dec.

Assessment

Sub assessment	Grading domain	Weight	Caesura
Assignments	Not achieved / Achieved	0	Higher or equal to 5.5
Oral Exam	1 t/m 10, 1 dec.	1	Higher or equal to 5.5

Reading list	

Practical actions	

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EXCHANGE PROGRAMME

Supply Chain Engineering 2020-2021

Description of the educational unit				
Course code: EDTSCE.19	Credits: **2** Ec's			Target group: **Fulltime Regular**
Description	Thema Supply Chain Engineering			
Competences	-			
Target group	Supporting the theme Supply Chain Engineering by facilitating consultation between students and to connect with company supervisors and supervising lecturers.			
Educational content	Guest lectures, team building			
Teaching methods	Interactive training and presentations			
Teaching aids	Not specified, depending on activities			
Supervisory activity	Consultation and coaching			
Sequence				
Level	Gevorderd (Advanced)			
Grading domain	Not achieved / achieved			
Assessment	Sub assessment	Grading domain	Weight	Caesura
	P1 Thema SCE	Not achieved / achieved	1	Higher or equal to 5.5
Reading list				
Practical actions	Practical skills modules			

Description of the educational unit				
Course code: EDPSCE.19	Credits: **12** Ec's			Target group: **Fulltime Regular**
Description	Project Supply Chain Engineering			
Competences	-			
Target group	See study guide			
Educational content	• This project is executed within a company or external organization. • The language is either Dutch or English depending upon the guest organization. • The project will normally be carried out in small groups. • Individual assignments are possible in relevant situations.			
Teaching methods	Assignments for an external organisation.			
Teaching aids	No special tools needed			
Supervisory activity	Coaching			
Sequence				
Level	Gevorderd (Advanced)			
Grading domain	1 t/m 10, 1 dec.			
Assessment	Sub assessment	Grading domain	Weight	Caesura
	P1 Supply Chain Engineering	1 t/m 10, 1 dec.	1	Higher or equal to 5.5
Reading list				
Practical actions	Project to carry out with an external organisation			

Description of the educational unit				
Course code:	EDSCP.19	Credits:	**4** Ec's	Target group: **Fulltime Regular**

Description	SC Planning			
Competences	-			
Target group	This course gets you up to speed in Warehousing and Fulfilment and Demand and Supply Integration. We propose an excellent stepping stone for students relatively new to the subject, while creating a challenging atmosphere for students with a background in Supply Chain Management. We do this through a cutting edge learning experience, making use of blended learning and an adaptive learning environment. Introduction to Supply Chain Engineering propels you for a great learning experience in-company and in-university.			
Educational content	See study guide			
Teaching methods	- College			
Teaching aids	See study guide			
Supervisory activity	See study guide			
Sequence				
Level	Gevorderd (Advanced)			
Grading domain	1 t/m 10, 1 dec.			
Assessment	Sub assessment	Grading domain	Weight	Caesura
	T1 SC Planning	1 t/m 10, 1 dec.	1	Higher or equal to 5.5
Reading list				
Practical actions				

Description of the educational unit				
Course code:	EDCSK.19	Credits:	**4** Ec's	Target group: **Fulltime Regular**

Description	Consultancy Skills			
Competences	-			
Target group	This course helps you to develop effective consultancy and communication skills. The aim of this course is to challenge you to examine the assumptions and interpretations you have about yourself and others. It helps you to examine the way you communicate in order to become more effective in getting your message across as a consultant.			
Educational content	See study guide			
Teaching methods	Coaching			
Teaching aids	See study guide			
Supervisory activity	See study guide			
Sequence				
Level	Gevorderd (Advanced)			
Grading domain	1 t/m 10, 1 dec.			
Assessment	Sub assessment	Grading domain	Weight	Caesura
	P1 Consultancy Skills Portfolio	1 t/m 10, 1 dec.	1	Higher or equal to 5.5
	P2 Consultancy Skills Assessment	1 t/m 10, 1 dec.	1	Higher or equal to 5.5
Reading list				
Practical actions				

Description of the educational unit					
Course code:	EDDSI.19	Credits:	**4** Ec's	Target group:	**Fulltime Regular**

Description	Demand & Supply Integration			
Competences	-			
Target group	After finishing this course you will know how to integrate the Demand and Supply processes, like Sales and Operations Planning (S&OP), in an organization. You will show a good understanding of forecasting and replenishment in a real life challenging business case. Finally you will be able to successfully present the research results as a convincing recommendation to the business client.			
Educational content	See study guide			
Teaching methods	Lectures & Case			
Teaching aids	See study guide			
Supervisory activity	See study guide			
Sequence				
Level	Gevorderd (Advanced)			
Grading domain	1 t/m 10, 1 dec.			
Assessment	Sub assessment	Grading domain	Weight	Caesura
	T1 Demand and Supply Integration	1 t/m 10, 1 dec.	1	Higher or equal to 5.5
Reading list				
Practical actions				

Description of the educational unit					
Course code:	EDWHF.19	Credits:	**4** Ec's	Target group:	**Fulltime Regular**

Description	Warehousing & Fulfilment			
Competences	-			
Target group	This course helps you to understand the latest developments of Warehousing and Fulfilment and the relations and impact they have on the Supply Chain, in concept and calculation. You will understand the role of Fulfilment in e- business, the ICT relations in a formal business environment for the software, hardware and network architecture. So in the end you will be able to (re-)design the Supply Chain on a conceptual, technical and business case level. For example to benefit from the rapidly increasing opportunities E-commerce offers.			
Educational content	See study guide			
Teaching methods	Lectures & Case			
Teaching aids	See study guide			
Supervisory activity	See study guide			
Sequence Sequence				
Level	Gevorderd (Advanced)			
Grading domain	1 t/m 10, 1 dec.			
Assessment	Sub assessment	Grading domain	Weight	Caesura
	P1 Case study	1 t/m 10, 1 dec.	1	Higher or equal to 5.5
Reading list	(). *See study guide*. :			
Practical actions				

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EXCHANGE PROGRAMME

Sustainable Structures 2020-2021

SUSTAINABLE STRUCTURES

Description of the educational unit			
Course code: BT.COMST.V14	Credits: **2** ECTS credits		Target group: **Fulltime Regular**
Description	Composite structures		
Competences	-		
Target group	The student has the knowledge and skills to design a structure in composite of limited scope and complexity (strength, stiffness and stability),and the knowledge hoe to construct building environment structures in composite.		
Educational content	Design and construct of composite structures.		
Teaching methods	Lectures, Workshop visit, self study		
Teaching aids	Calculator, Computer		
Supervisory activity	The lecturer provides hearing & excersing lectures.		
Sequentiality	Applied Mechanics Stuctural design (Strength, ULS, Stifness SLS, facors) Staal-, beton- en houtconstructies / Steel, concrete and timber structures Mathematics Mechanics Civil structural materials		
Level	Bachelor = NLQF 6		
Grading domain	1 t/m 10, 1 dec.		
Assessment	Sub assessment	Grading domain	Weight / Caesura
	Exam	1 t/m 10, 1 dec.	1 / Higher or equal to 5.5
Reading list	(). *CUR 96 Vezelversterkte Kunststoffen in civiele draagconstructies / Fiber Reinforced Polymers in civil structures.*. :		
Practical actions			

Description of the educational unit			
Course code: BT.PSS.V18	Credits: **3** ECTS credits		Target group: **Fulltime Regular**
Description	Project Sustainable Structures		
Competences	-		
Target group	To design a steel/timber/FRP structure according to applicable codes.		
Educational content	During the project course, you will work in a team on a realistic, mulitdisciplinairy project together with other students. You will exercise drafstmen and structural engineering skills. This means that you will be gaining work experience on a structural project.		
Teaching methods	Working in multi-disciplinairy teams on the following product: basis of design, variant study, structural calculations and structural drawings.		
Teaching aids	Computersoftware (office, Deltares Dseries, FEM, CAD) Literature depending on the project. Laptop & Calculator.		
Supervisory activity	You will work with other students in a team. Teachers are available for consultation on project day (to be determined).		
Sequentiality			
Level	Gevorderd (Advanced)		
Grading domain	1 t/m 10, 1 dec.		
Assessment	Sub assessment	Grading domain	Weight / Caesura
	Assignment	1 t/m 10, 1 dec.	1 / Higher or equal to 5.5
Reading list			
Practical actions			

Description of the educational unit				
Course code: BT.SE.V18	Credits: **3** ECTS credits		Target group: **Fulltime Regular**	
Description	Sustainability in Engineering			
Competences	-			
Target group	Learn to asses environmental impact of structures.			
Educational content	Compare environmental impact of at least 3 variants in your structural project.			
Teaching methods	Working in project team on `Environmental impact comparison´ report.			
Teaching aids	laptop Ecocost database Vogtländer J, http://www.ecocostsvalue.com/ TUDelft			
Supervisory activity	You will work with other students in your project team. Teacher is available for consultation in the afternoon of the project day (to be determined).			
Sequentiality				
Level	Gevorderd (Advanced)			
Grading domain	1 t/m 10, 1 dec.			
Assessment	Sub assessment	Grading domain	Weight	Caesura
	Assignment	1 t/m 10, 1 dec.	1	Higher or equal to 5.5
Reading list				
Practical actions				

Description of the educational unit				
Course code: BT.MECBOW2.V18	Credits: **3** ECTS credits		Target group: **Fulltime Regular**	
Description	Advanced Applied Mechanics			
Competences	-			
Target group	In deze onderwijseenheid wordt de theoretische onderbouwing aangereikt voor het beoordelen van de constructie van bouwwerken voor wat betreft sterkte, stijfheid en stabiliteit.			
Educational content	• Extension stress by double bending • Extension stress by extension force and combination of stresses • Shear stress by shear force • Shear stress by torsion combinations of stresses • Statically in-determined beams • Statically in-determined frameworks			
Teaching methods	Hoorcollege, Werkcollege, Zelfstudie			
Teaching aids	Laptop & Calculator.			
Supervisory activity	Lectures, self-study			
Sequentiality				
Level	Advanced			
Grading domain	1 t/m 10, 1 dec.			
Assessment	Sub assessment	Grading domain	Weight	Caesura
	Exam	1 t/m 10, 1 dec.	1	Higher or equal to 5.5
Reading list				
Practical actions				

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EXCHANGE PROGRAMME

Water Management 2020-2021

Description of the educational unit				
Course code: BT.AWM.V19	Credits: **3** ECTS credits		Target group: **Fulltime Regular**	
Description	Advanced Water management: River modelling			
Competences	-			
Target group	Computational modelling is becoming a core part in solving water management issues. After finishing this course you should be able to understand and apply the basic principles regarding soil water and surface water in the setting up of a hydraulic computational model. The student will be • Implementing knowledge on soil water in a basin runoff model • Implementing knowledge on river flows in a 1D model • Analyzing river hydrographs to determine river discharges and water levels			
Educational content	The water cycle determines to a great extent the possibilities for live on this planet. Transport and conveyance of water in various phases and stages enables for instance plant growth or river flow and influences our climate. Thorough understanding of the physical principles of hydrology - the study of the occurrence, movement, and physical properties of non-oceanic water on and below the earth's surface – is necessary for sustainable water management and related innovations to ensure our livelihoods. This course builds on the water-related courses you have followed earlier during your bachelor study "Civil Engineering". In other courses the water balance, atmospheric water and groundwater were discussed. This course deals with the topics of soil water and surface water and you will be working with this knowledge in a computational 1D flow model.			
Teaching methods	The weekly courses will be built up by an introductionary part (theory and concepts) and a practical part in which students will be building an computational river model.			
Teaching aids	• Selected computational modelling software • Own laptop			
Supervisory activity	Teaching and coaching			
Sequentiality				
Level	Gevorderd (Advanced)			
Grading domain	1 t/m 10, 1 dec.			
Assessment	Sub assessment	Grading domain	Weight	Caesura
	Modelling Exercise	1 t/m 10, 1 dec.	1	Higher or equal to 5.5
Reading list				
Practical actions	Practical skills lessons			

Description of the educational unit				
Course code: BT.HYD.V20	Credits: **3** ECTS credits		Target group: **Fulltime Regular**	
Description	Hydrology and Geohydrology			
Competences	-			
Target group	This course is about the concepts of physical hydrology and geohydrology. The course provides a solid grounding in the principles of these subjects. Exploring the principal rules that govern the flow of atmospheric water, surface water and groundwater. Students learn how to evaluate specific situations by using modelling techniques. The subject material is trained by solving a large number of hydrological examples and exercises [Source: Introduction to Physical Hydrology, Martin R. Hendriks]			
Educational content	Introduction in Hydrology; hydrological cycle; drainage basin; water balance; global hydrology; Basic applications of surface water flow and groundwater flow (steady state, 1D en 2D).			
Teaching methods	Tutorials and lectures, power points			
Teaching aids	• Reader: Introduction to Physical Hydrology, Martin R. Hendriks • Lecture slides			
Supervisory activity	Lectures, Assistance and guidance			
Sequentiality				
Level	Gevorderd (Advanced)			
Grading domain	1 t/m 10, 1 dec.			
Assessment	Sub assessment	Grading domain	Weight	Caesura
	Assignment	1 t/m 10, 1 dec.	6	Higher or equal to 5.5
	Exam	1 t/m 10, 1 dec.	4	Higher or equal to 5.5
Reading list	Martin R. Hendriks (2010). *Introduction to Physical Hydrology*. : Oxford University Press			
Practical actions				

Description of the educational unit				
Course code: BT.KOWM.V19	Credits: **1** ECTS credits		Target group: **Fulltime Regular**	
Description	Kick Off Water Management			
Competences	-			
Target group	The student has an overview of major topics regarding water management and knows the structure of the program and the relations between the topics.			
Educational content	Introduction in the field of international water management through lectures and assignments.			
Teaching methods	Lectures and assignments, presentations, serious game.			
Teaching aids	None, all materials will be provided via the ELO			
Supervisory activity	(guest-) Lectures will be given and students are asked to make assignments and to participate in a serious game guided by the teacher.			
Sequentiality				
Level	Gevorderd (Advanced)			
Grading domain	Not achieved / Achieved			
Assessment	Sub assessment	Grading domain	Weight	Caesura
	Assignments	Not achieved / achieved	1	Higher or equal to 5.5
Reading list				
Practical actions				

Description of the educational unit			
Course code: BT.PWM.V20	Credits: **4** ECTS credits		Target group: **Fulltime Regular**
Description	Project Water management		
Competences	-		
Target group	The student is able to go through the design process successfully, with a professional design- or advisory report as a final result. During the design process the student shows professional skills in communication and collaboration.		
Educational content	Students work in teams on a water related project within a specific organizational context. Within the water related project the different steps of the design process are taken. The design process concerns: Define the problem, collect information, brainstorm and analyse, develop solutions, present your ideas and receive feedback, improve on your design. During the project the students have to develop and improve their collaborative and communicative skills, both intern in the project group as extern to the professional organization and Windesheim. The project is coached by a professional from the organization and by a lecturer/coach from Windesheim. Further details can be found in the study guide of the course.		
Teaching methods	During the Water project, you will work in a team on a complex project in an organizational context. This means that you will be gaining work experience on a project concerning hydraulics or water management in an organization. During the period there will be an introduction to a topic, feedback sessions and discussions and peer interaction.		
Teaching aids	Use of literature, computers, mobile phones, tablets (any devises using internet) and maybe programs needed for the project.		
Supervisory activity	Coaching and feedback by a coach and assistance and guidance from peer students.		
Sequentiality			
Level	Gevorderd (Advanced)		
Grading domain	1 t/m 10, 1 dec.		
Assessment	Sub assessment	Grading domain	Weight	Caesura
	Assignments	1 t/m 10, 1 dec.	1	Higher or equal to 5.5
Reading list			
Practical actions	Cooperative group work at Windesheim with external clients		

Description of the educational unit			
Course code: BT.REP.V17	Credits: **2** ECTS credits		Target group: **Fulltime Regular**
Description	Research Project		
Competences	-		
Target group	Develop research skills prepare for final thesis project		
Educational content	Research project in the field of thesis subject		
Teaching methods	research project		
Teaching aids	-		
Supervisory activity	assistance		
Sequentiality	Research methods		
Level	Gevorderd (Advanced)		
Grading domain	1 t/m 10, 1 dec.		
Assessment	Sub assessment	Grading domain	Weight	Caesura
	Research Plan	1 t/m 10, 1 dec.	1	Higher or equal to 5.5
Reading list			
Practical actions			

Description of the educational unit

Course code: EN-IN-WNID.XX.01 Credits: **2** ECTS credits Target group: **Geen specifieke doelgroep**

Description	Introduction module of Windesheim and the Netherlands in an international context.
Competences	-
Target group	Objectives • To learn about organisational structures in the Netherlands; • To learn about specific national features of the Netherlands; • To learn about aspects of Dutch cuisine; • To learn more about typical aspects of Dutch identity; • To learn more about specific aspects of Dutch cultural/historical heritage; • To get an international perspective on above mentioned themes by comparing them with student's home country (and learn -as a side effect- as well about these themes in other (European) countries).
Educational content	Educational content: • Organisational structures in the Netherlands: educational system, infrastrucure of the city centre and municipal political system; • Specific national features: language, folklore and geography; • Aspects of Dutch cuisine: habits on dinner time, traditional dishes/preferences and cultural and historical influences on the cuisine; • 1 typical aspect of the Dutch identity (depending on the season): 'Sinterklaas' or ice skating; • Specific aspects of Dutch/historical heritage: visiting places of historic interest and related background information.
Teaching methods	Student's activities Be present at and take part in: • Presentations of guest speakers; • Excursions; • Meetings providing background information related to the topics of the activities; • Group discussions.
Teaching aids	Educational support: • Module description on blackboard; • Information to be found on internet; • Suggestion of book.
Supervisory activity	Activities of the International Office and lecturers: • Organising presentations of guest speakers; • Leading excursions; • Providing specific information related to the topics of the activities; • Organising group discussions and sharing of knowledge about the themes mentioned in the educational information. Note: This module is a joint effort of our International Office, responsible for the activities as such, and lecturers, responsible for the educational part of this module, which is reviewing the written reports.
Sequentiality	Pre-condition for entering the module Knowledge of English • Student is able to understand explanations; • Student is able to take part in group discussions; • Student is able to write a report.
Level	Basis = NLQF 4+
Grading domain	1 t/m 10, 1 dec.

Assessment

Sub assessment	Grading domain	Weight	Caesura
Portfolio	1 t/m 10, 1 dec.	100	Higher or equal to 5.5

Reading list	Martijn de Rooi (2005). *The Dutch I presume.*. Weesp: Nilsson & Lamm
Practical actions	Practical skills lessons