Course Catalogue Engineering and ICT

EXCHANGE PROGRAMME

Applied Mechanics 2024-2025

University of Applied Sciences Windesheim

Course summary

VOE Code: EDPAM1.18 ECTS credits: 6 Level: Bachelor's degree (full-time)

Course Title	Project Applied Mechanics		
Type	Compulsory		
Learning competences			
Learning outcomes	The project starts with an assignment of a company. The goal of the project is to provide a constructive solution for the analysed problems.		
Course content	• Project assignment • Analyse and research a construction problem and providing a solution		
Planned learning activities and teaching methods	Group assignment		
Recommended or required reading and other learning resources / tools	• Books • Any resource		
Prerequisites and co-requisites	You are required to have two years of Bachelor's study experience in a relevant field (e.g. Bachelor's degree in Mechanical Engineering) and English-language skills at B2 level. In order to be able to complete some modules, you will also need mathematics and physics at high school level.		
Level	Advanced		
Grading scale	1 up to 10, 1 dec.		
Assessment methods and criteria	**Type of assessment**	**Grade weighting**	**Criteria**
	P1: Project Applied Mechanics	1	Higher or equal to 5.5
Language of Instruction	English		
Name of lecturer	For information about the lecturers you can contact Laurens Bervoets		
Mode of delivery	Face to face		

Course summary

VOE Code: EDPAM.1.18 ECTS credits: 2 Level: Bachelor's degree (full-time)

Course Title	Report Project Applied Mechanics
Type	Compulsory
Learning competences	
Learning outcomes	The project starts with an assignment of a company. The goal of the project is to provide a constructive solution for the analysed problems.
Course content	• Project assignment • Analyse and research a construction problem and providing a solution
Planned learning activities and teaching methods	Group assignment
Recommended or required reading and other learning	• Books • Any resource

resources / tools			
Prerequisites and co-requisites	You are required to have two years of Bachelor's study experience in a relevant field (e.g. Bachelor's degree in Mechanical Engineering) and English-language skills at B2 level. In order to be able to complete some modules, you will also need mathematics and physics at high school level.		
Level	Advanced		
Grading scale	1 up to 10, 1 dec.		
Assessment methods and criteria	**Type of assessment**	**Grade weighting**	**Criteria**
	P1 Report Project Applied Mechanics	1	Higher or equal to 5.5
Language of Instruction	English		
Name of lecturer	For information about the lecturers you can contact Laurens Bervoets		
Mode of delivery	Face to face		

Course summary

VOE Code: EDAMCO.19 ECTS credits: 2 Level: Bachelor's degree (full-time)

Course Title	Composites		
Type	Compulsory		
Learning competences			
Learning outcomes	**Composites:** • Introduction to materials, production and applications of composites. • Introduction to basic calculation methods for stress and strain in composite materials.		
Course content	**Composites:** • Introduction to materials, production and applications of composites. • Introduction to basic calculation methods for stress and strain in composite materials.		
Planned learning activities and teaching methods	Lectures and Workshop		
Recommended or required reading and other learning resources / tools	R.P.L.Nijssen (2013). *Composieten: Basiskennis*. Marknesse: VKCN • Solidworks Cad • Solidworks Simunlation Add-In on laptop		
Prerequisites and co-requisites	You are required to have two years of Bachelor's study experience in a relevant field (e.g. Bachelor's degree in Mechanical Engineering) and English-language skills at B2 level. In order to be able to complete some modules, you will also need mathematics and physics at high school level.		
Level	Advanced		
Grading scale	1 up to 10, 1 dec.		
Assessment methods and criteria	**Type of assessment**	**Grade weighting**	**Criteria**
	T1 Composites	1	Higher or equal to 5.5
Language of Instruction	English		
Name of lecturer	For information about the lecturers you can contact Laurens Bervoets		
Mode of delivery	Face to face		

Course summary

VOE Code: EDAMMV.19 ECTS credits: 4 Level: Bachelor's degree (full-time)

Course Title	Modelling and Validation		
Type	Compulsory		
Learning competences			
Learning outcomes	**Modelling & Validation:** • Assessing actual Strength and Stability problems by combined application (1) Theoretical calculation models, (2) FEM-analysis models and (3) Testing.		
Course content	**Modelling & Validation:** • Assessing actual Strength and Stability problems by combined application (1) Theoretical calculation models, (2) FEM-analysis models and (3) Testing.		
Planned learning activities and teaching methods	Lectures and Workshop		
Recommended or required reading and other learning resources / tools	• Solidworks Cad • Solidworks Simunlation Add-In on laptop		
Prerequisites and co-requisites	You are required to have two years of Bachelor's study experience in a relevant field (e.g. Bachelor's degree in Mechanical Engineering) and English-language skills at B2 level. In order to be able to complete some modules, you will also need mathematics and physics at high school level.		
Level	Advanced		
Grading scale	1 up to 10, 1 dec.		
Assessment methods and criteria	**Type of assessment**	**Grade weighting**	**Criteria**
	P1 Modelling and Validation	1	Higher or equal to 5.5
Language of Instruction	English		
Name of lecturer	For information about the lecturers you can contact Laurens Bervoets		
Mode of delivery	Face to face		

Course summary

VOE Code: EDD.16 ECTS credits: 5 Level: Bachelor's degree (full-time)

Course Title	Design tools
Type	Compulsory
Learning competences	
Learning outcomes	Getting acquainted with various design tools and delving deeper into two design tools of your choice.
Course content	In this practice course , you will get an overview of various design tools. After an introduction, you can choose which design tools you want to further explore. The minimum requirement is two, but you can also choose more. The following tools are included, these are examples, the current overview is mentioned in the study manual every year: • KISSSOFT: This is a software tool used for calculating machine components. Especially in the field of gears, this package is leading.

	• CE-marking: Topics include technical-legal aspects, safety, and liability related to building machines and products. • Solid Works Motion/PDM: Motion is a comprehensive Multibody package used, among others, in the development of cars and roller coasters. The Product Data Management practical is provided in collaboration with the company VMI. In the practical, you will become acquainted with this important material for mechanical engineers and with recent developments in this field. • FMECA: This part lays the foundation for design methods and procedures to determine and improve the reliability of a machine. Topics include probabilistic approach, failure analysis, load capacity of contact surfaces, friction, wear, and lubrication. • Non Linear FEM: In this practical, you will learn to deal with large deformations and nonlinear material behavior. You will learn the limits of conventional calculations.
Planned learning activities and teaching methods	• Lectures • Practical sections and workshops
Recommended or required reading and other learning resources / tools	Various tools depending on the chosen design tools
Prerequisites and co-requisites	You are required to have two years of Bachelor's study experience in a relevant field (e.g. Bachelor's degree in Mechanical Engineering) and English-language skills at B2 level. In order to be able to complete some modules, you will also need mathematics and physics at high school level.
Level	Advanced
Grading scale	1 up to 10, 1 dec.
Assessment methods and criteria	**Type of assessment** / **Grade weighting** / **Criteria** P1 Designtools: Introductions / 0 / Higher or equal to 5.5 P2 Designtool 1 / 1 / Higher or equal to 5.5 P3 Designtool 2 / 1 / Higher or equal to 5.5
Language of Instruction	English
Name of lecturer	For information about the lecturers you can contact Laurens Bervoets
Mode of delivery	Face to face

Course summary

VOE Code: EDAT1E.24 ECTS credits: 5 Level: Bachelor's degree (full-time)

Course Title	Drive Technology
Type	Compulsory
Learning competences	
Learning outcomes	• Basis knowledge about electrical drive systems. • Advanced knowledge about machine components.
Course content	Machine components 3: • Interference fit • Couplings • Bolt connections • etc. Electrical drive systems: • Interaction motor and load • DC-motors

	• Steppermotors • AC-power • 3 phase systems • Induction motors
Planned learning activities and teaching methods	• Lecture • Practical workshop
Recommended or required reading and other learning resources / tools	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 • Energy lab • Pin on disk • Calculator
Prerequisites and co-requisites	You are required to have two years of Bachelor's study experience in a relevant field (e.g. Bachelor's degree in Mechanical Engineering) and English-language skills at B2 level. In order to be able to complete some modules, you will also need mathematics and physics at high school level.
Level	Advanced
Grading scale	1 up to 10, 1 dec.

Assessment methods and criteria	**Type of assessment**	**Grade weighting**	**Criteria**
	P1: Lab work	1	Higher or equal to 5.5
	P2: Machine components 3	1	Higher or equal to 5.5
	T1: Electrical drive systems	1	Higher or equal to 5.5

Language of Instruction	English
Name of lecturer	For information about the lecturers you can contact Laurens Bervoets
Mode of delivery	Face to face

Course summary

VOE Code: EDDYV.23 ECTS credits: 4 Level: Bachelor's degree (full-time)

Course Title	Dynamics and Vibrations
Type	Compulsory
Learning competences	
Learning outcomes	1. The student can analyse and apply (within an end results accuracy of ±5%) clearly the kinematics of relative motion analysis of rigid-body plane motion using a translating and/or rotating frame of reference. 2. The student can write, analyse and apply correcly the kinetics formula's for the linear and angular momentum of rigid-body plane motion. 3. The student can analyse and apply the correct model of vibration on a given problem (free and/ or forced, damped and/or undamped vibration) to solve different basic problems in Engineering vibration. 4. The student can perform a design for a vibration isolation system correctly and validate the results according to the used theoretical model.
Course content	Quarter 9 (W3)

<table>
<tr><td></td><td colspan="3">Module 1: Relative Motion Analyses: Rigid body Planar Kinematics
Topic(s)
• Relative Motion Analysis: Velocity, Instantaneous Centre of Zero Velocity.
• Relative Motion Analysis: Acceleration
• Relative Motion Analysis Using Rotating Axes: Velocity & Acceleration

Module 2: Linear and Angular Momentum
Topic(s)
• Linear and Angular Momentum
• Principle of Impulse and Momentum
• Conservation of Momentum
• Eccentric Impact

Module 3: Introduction to Engineering Vibration
Topic(s)
• Undamped Free and Forced Vibration
• Damped Free and forced Vibration

Module 4: Design Applications of Engineering Vibration
Topic(s)
• Applications of Engineering Vibration
• Modelling of Constructional Members
• Designing of Vibration Isolation Systems</td></tr>
<tr><td>Planned learning activities and teaching methods</td><td colspan="3">• Interactive lectures
• Eventual guest lectures in cooperation with industry</td></tr>
<tr><td>Recommended or required reading and other learning resources / tools</td><td colspan="3">Russell Charles Hibbeler ().

Dynamica

. : Pearson Education

Singiresu S. RAO ().
Elective reference book:
Mechanical Vibration. : Pearson Education

• Weekly presentations
• Problem list
• Homework</td></tr>
<tr><td>Prerequisites and co-requisites</td><td colspan="3">You are required to have two years of Bachelor’s study experience in a relevant field (e.g. Bachelor’s degree in Mechanical Engineering) and English-language skills at B2 level. In order to be able to complete some modules, you will also need mathematics and physics at high school level.</td></tr>
<tr><td>Level</td><td colspan="3">Advanced</td></tr>
<tr><td>Grading scale</td><td colspan="3">1 up to 10, 1 dec.</td></tr>
<tr><td rowspan="3">Assessment methods and criteria</td><td>Type of assessment</td><td>Grade weighting</td><td>Criteria</td></tr>
<tr><td>T1: Relative motion and impact</td><td>1</td><td>Higher or equal to 5.5</td></tr>
<tr><td>T2: Vibrations</td><td>1</td><td>Higher or equal to 5.5</td></tr>
<tr><td>Language of Instruction</td><td colspan="3">English</td></tr>
<tr><td>Name of lecturer</td><td colspan="3">For information about the lecturers you can contact Laurens Bervoets</td></tr>
<tr><td>Mode of delivery</td><td colspan="3">Face to face</td></tr>
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Course summary

VOE Code: EDAMTE.20 ECTS credits: 1 Level: Bachelor's degree (full-time)

Course Title	Technical English for Applied Mechanics		
Type	Compulsory		
Learning competences			
Learning outcomes	The student is able to: • Orally summarize a (written or spoken) text related to the minor in (as much as possible) in own words. • Write an English report (10-15 pages) of a project related to the minor.		
Course content	Written skills are practiced during lectures, including summarizing and translating.		
Planned learning activities and teaching methods	Explanation and training during lectures.		
Recommended or required reading and other learning resources / tools	Reader and visuals		
Prerequisites and co-requisites	You are required to have two years of Bachelor's study experience in a relevant field (e.g. Bachelor's degree in Mechanical Engineering) and English-language skills at B2 level. In order to be able to complete some modules, you will also need mathematics and physics at high school level.		
Level	Advanced		
Grading scale	1 up to 10, 1 dec.		
Assessment methods and criteria	**Type of assessment**	**Grade weighting**	**Criteria**
	P1 Technical English for AM	1	Higher or equal to 5.5
	P2 Technical English for AM	1	Higher or equal to 5.5
Language of Instruction	English		
Name of lecturer	For information about the lecturers you can contact Laurens Bervoets		
Mode of delivery	Face to face		

Course summary

VOE Code: EDAMPCOM4.19 ECTS credits: 1 Level: Bachelor's degree (full-time)

Course Title	Professional Communication 4
Type	Compulsory
Learning competences	
Learning outcomes	Gain knowledge and develop skills in the field of written and oral communication.
Course content	Students choose two communication themes (out of four) that they want to know more about. Themes relate to oral and written communication.
Planned learning activities and teaching methods	Practical sections , where material is explained and after which students can apply material in exercises, assignments, etc.
Recommended or required	Audiovisual aids

reading and other learning resources / tools			
Prerequisites and co-requisites	You are required to have two years of Bachelor's study experience in a relevant field (e.g. Bachelor's degree in Mechanical Engineering) and English-language skills at B2 level. In order to be able to complete some modules, you will also need mathematics and physics at high school level.		
Level	Advanced		
Grading scale	1 up to 10, 1 dec.		
Assessment methods and criteria	**Type of assessment**	**Grade weighting**	**Criteria**
	P1 Professional Communication 4	1	Higher or equal to 5.5
Language of Instruction	English		
Name of lecturer	For information about the lecturers you can contact Laurens Bervoets		
Mode of delivery	Face to face		