HAN_UNIVERSITY OF APPLIED SCIENCES

Degree Statute for the Master's Degree Course

Engineering Systems

of HAN University of Applied Sciences academic year 2025 - 2026

Part 2 **Education and Examination Regulations (EER)**
Chapter 6, Appendix 2 Transfer Minor Engineering Systems

Details of study: Transfer Minor Engineering Systems

Module code **EAMDTM01**	**Transfer Minor Engineering Systems**
Degree program	Engineering bachelor programs
Target Group	Students from various engineering bachelor programs (like Automotive Engineering, Built environment, Civil Engineering, Electrical and Electronic Engineering, Embedded Systems Engineering, Industrial Product Design, Industrial Engineering, Computer science, Mechanical Engineering or equivalent.
Coordinating lecturer	Frank Poelmans
Code for OSIRIS	EAMDTM01
Professional Task	Analysing, modelling and control of engineering systems
Professional Products	Mathematical model of a practical engineering application
Credits / Study load	30 EC / 840 hours
Relationship with and entry requirements concerning examinations	<u>Relationship with Master of Engineering Systems</u> The minor is a bridge to the Master Engineering Systems (MES). It offers a technical deepening and extension of engineering knowledge. This eventually leads to a good connection with the MES. Current topics like sustainable energy and smart systems (in industry and automotive) will be covered in the project. <u>Entry requirements</u> Students who have their propaedeutic certificate and at least 120 EC points in a technical Bachelor program, or students with an (international) comparable program. Sufficient understanding of the English language (spoken and written) is required. You will receive an admission advice after an intake in which your motivation and background is discussed.
General Description	In this minor the student will gain knowledge on analysing, modelling and control of physical systems in the mechanical, electrical and thermodynamic/ fluid dynamic domains. This minor consists of 50% theory and 50% practical application: • Theoretical deepening of mathematics and extension of technical knowledge. Models for physical systems will be established by using white box modelling and by using experimental data. The models will be validated. Also, knowledge on designing a controller will be gained.

	• Application of this knowledge in computer simulations. Simulations of established models will be performed to analyse the systems behaviour. • Application in project work where research and communication skills play an important role. The core of the project is researching the dynamic behaviour of engineering systems. The following subjects will be covered in the transfer minor: • Mathematics (i.e. complex numbers, differential equations, La place transforms, linear algebra, statistics) • Applied Physics (i.e. mechanics, dynamics, heat transfer, fluid dynamics, electricity, magnetism), • Introduction modelling • Practice Modelling and Simulation (Matlab, Simulink) • Feedback Control • Research and scientific skills • Project work related to modelling and control • Technical support meetings
Final Qualifications	The profile of the HBO domain Engineering: C1. Analysis C2. Design C3. Realisation C4. Control C5. Management C6. Advice C7. Research C8. Professionalisation
Units of study	Mathematics (6 EC) Applied theoretical courses - Applied Physics (3 EC) - Introduction Modelling (3 EC) - Feedback control (3 EC) Practice Modelling and Simulation (5 EC) Project work (group) (10 EC)
Minimum Number of Students	This transfer minor will be offered only if at least five students are enrolled. The didactic approach may be adapted to the group size while ensuring the intended learning outcomes.

Unit of Study (UoS) **EATMMA01**	**Mathematics**
General Information	
Long name of unit of study	Mathematics
Short name of unit of study	Mathematics
Code for unit of study OSIRIS	EATMMA01
Teaching Term	P1A, P2A, P3A, P4A
Registering for educational components	Go to Part 2 “3.6 Registering for educational activities” for more information.
Credits/study load	6 EC / 168 hours
Study hours (contact hours)	32 contact hours + 3 contact hours exam
Entry requirements	It is expected that the student has mastered basic mathematics skills within the technical Bachelor program.
Content and organization	
General description	In order to create a model of an engineering system, good mathematical skills are important. In this course the relevant skills are taught to be able to set up a white box model or interpret measurement data and create a black box model. The following topics will be covered: - Complex numbers - Differential equations - Laplace transforms - Linear algebra - Statistics
Required literature / description of ‘learning material’	Reader Mathematics Handouts
Recommended literature	-
Required software	-
Cohesion Relationship	Units of study Transfer minor Engineering Systems
Compulsory participation	No, but attendance will be registered
Activities and/or instructional formats	Self-study, Working on assignments and exercises Work Forms: Lectures, review exercises, discussion
Examinations	
Final Qualifications	C1 Analysis
Assessment dimensions / learning outcomes	Dimensions of assessment: • Knowledge and understanding (mathematical skills for dynamic systems, analysing and defining problems)

Assessment criteria	The student will be assessed on answering the questions: • clearly and to the point, including sufficient relevant explanation and depth, motivation • without irrelevant additional information • using correct equations for the situation • using correct units for quantities in equations, graph labels, etc. in practical examples of mathematics	
Information for each exam and modular exam		
Examinations	Exam name	TMES MA Written Exam
	Exam code	TOETS-01
	Registering and deregistering for exam opportunities	Go to Part 2 5.4.1 Registering for exams and modular exams
	Exam format	KENN Knowledge exam on location / written
	Exam type	ANS
	Exam week	P2A, P4A (week 9)
	First examiner	Dimitri Jeltsema
	Permitted resources	A3 summary and a basic scientific, non-programmable, non-graphical calculator, for example: Casio fx-82, Texas Instruments TI-30
	Number of examiners	1
	Assessment	Mark
	Pass mark	55
	Minimal result	55
	Weight	1
	Reassessment	1 (P4A week 9) (P5A August)
	Compensation	No
	Review	Week 3.4, 4.12
Other information		
Required classroom	Regular classroom	

Unit of Study (UoS) **EATMAP01**	**Applied Physics**
General Information	
Long name of unit of study	Applied Physics
Short name of unit of study	Applied Physics
Code for unit of study OSIRIS	EATMAP01
Teaching Term	P1A, P3A
Registering for educational components	Go to Part 2 “3.6 Registering for educational activities” for more information.
Credits/study load	3 EC / 84 hours
Study hours (contact hours)	16 contact hours, 6 hours technical support and 3 contact hours exam
Entry requirements	It is expected that the student has mastered basic mathematics skills (esp. differentiation, integration, differential equations).
Content and organization	
General description	The course Applied Physics (AP) covers the following topics: Mechanical systems: • Dynamics and kinematics of general motion of a body (translations, rotations, moment of inertia, transmissions, energy conservation) • Vibrations with multiple DOF (free vibrations, excited vibrations) • 1st and 2nd order mechanical systems Electrical systems: • Electrical networks • Operational amplifier circuits • Electromechanical systems Thermodynamic/Fluid dynamic systems: • Energy balances, mass balances • Heat transfer, Bernoulli flow equation • 1st law and 2nd law of thermodynamics • Reversible changes of ideal gas, thermodynamic diagrams
Required literature / description of ‘learning material’	• Erwin Kreyszig, *Advanced Engineering Mathematics,* 10th edition, International Student Version (2011) • Engineering Mechanics: Dynamics SI Edition, R.C. Hibbeler, 14th Edition, Pearson, ISBN 9781292088723 • Norman S. Nise, Control Systems Engineering, 8th edition (EMEA edition), Wiley, ISBN 978-1-119-59013-2 • Reader Introduction Dynamics, E. Tazelaar et al, HAN, 2016 • Lecturing material available on Onderwijs Online
Recommended literature	• Transport Phenomena, The art of Balancing, H. vd Akker, R.F. Mudde, Delft Academic Press, ISBN 9789065623584
Required software	-
Cohesion Relationship	Units of study Transfer minor Engineering Systems

Compulsory participation	No, but attendance will be registered	
Activities and/or instructional formats	Self-study, Working on assignments and exercises Work Forms: Lectures	
Examinations		
Final Qualifications	C1 Analysis	
Assessment dimensions / learning outcomes	Dimensions of assessment: • Knowledge and understanding (analysing and defining problems) The student is able to analyse moderately complex physical systems in the mechanical, electrical and/or thermodynamic/fluid dynamic domains by describing the systems with differential equations. The system descriptions are found via white box modelling.	
Assessment criteria	The student will be assessed on answering the questions: clearly and to the point, including sufficient relevant explanation and depth, comparable with the depth of the literature studied • without irrelevant additional information • using correct equations and models for the situation (for example when to use linear or nonlinear models) • using correct units for quantities in equations, graph labels, etc.	
Information for each exam and modular exam		
Examinations	Exam name	TMES AP Written Exam
	Exam code	TOETS-01
	Registering for re-exam OSIRIS	Go to Part 2 5.4.1 Registering for exams and modular exams
	Exam format	KENN Knowledge exam on location / written
	Exam type	ANS
	Exam week	P1A, P3A (week 9)
	First examiner	Frank Poelmans
	Permitted resources	A3 summary and a basic scientific, non-programmable, non-graphical calculator, for example: Casio fx-82, Texas Instruments TI-30
	Number of examiners	1
	Assessment	Mark
	Pass mark	55
	Minimal result	55
	Weight	1
	Reassessment	1 (P3A week 9) (P5A August)
	Compensation	No
	Review	Review week 2.4, 4.4
Other information		
Required classroom	Regular classroom	

Unit of Study (UoS) **EATMIM01**	**Introduction Modelling**
General Information	
Long name of unit of study	Introduction Modelling
Short name of unit of study	Introduction Modelling
Code for unit of study OSIRIS	EATMIM01
Teaching Term	P1A, P3A
Registering for educational components	Go to Part 2 "3.6 Registering for educational activities" for more information.
Credits/study load	3 EC / 84 hours
Study hours (contact hours)	16 contact hours, 6 hours technical support and 3 contact hours exam
Entry requirements	It is expected that the student has mastered basic mathematics skills (esp. differentiation, integration, differential equations).
Content and organization	
General description	The course Introduction Modelling (IM) covers the following topics: • Modelling goals, process definitions, data flow diagram • 4+1 step approach • Model equations and mathematical solutions • Conversion of differential equations into transfer functions • Model simulation (Simulink, pole-zero map, step-response, bode plot) • Conversion of differential equations into state space models • Process delays, nonlinear systems • Introduction to multi domain systems
Required literature / description of 'learning material'	Erwin Kreyszig, *Advanced Engineering Mathematics,* 10th edition, International Student Version (2011) Norman S. Nise, Control Systems Engineering, 8th edition (EMEA edition), Wiley, ISBN 978-1-119-59013-2 (ONLINE Zybooks) Reader Introduction Dynamics, E. Tazelaar et al, HAN, 2016 Lecturing material available on Onderwijs Online
Recommended literature	-
Required software	MATLAB, Simulink
Cohesion Relationship	Units of study Transfer minor Engineering Systems
Compulsory participation	No, but attendance will be registered
Activities and/or instructional formats	Self-study, Working on assignments, Simulation exercises, Case studies Work Forms: Lectures
Examinations	
Final Qualifications	C1 Analysis C2 Design

Assessment dimensions / Learning outcomes	Dimensions of assessment: • Knowledge and understanding (analysing and defining problems) • Applying knowledge and understanding (Design physical systems) The student is able to analyse moderately complex physical systems in the mechanical, electrical and/or thermodynamic/fluid dynamic domains by describing the systems with either differential equations, transfer functions, state-space models or Bode diagrams in order to determine the system characteristics and be able to perform computer simulations. The student is able to describe the system using methods like white box modelling or step response experiments assuming lowest possible complexity for the analysis of relevant system characteristics.	
Assessment criteria	The student will be assessed on answering the questions: clearly and to the point, including sufficient relevant explanation and depth, comparable with the depth of the literature studied • without irrelevant additional information • using correct equations and models for the situation (for example when to use linear or nonlinear models) • using correct units for quantities in equations, graph labels, etc.	
Information for each exam and modular exam		
Examinations	Exam name	TMES IM Written Exam
	Exam code	TOETS-01
	Registering for re-exam OSIRIS	Go to Part 2 5.4.1 Registering for exams and modular exams
	Exam format	KENN Knowledge exam on location / written
	Exam type	ANS
	Exam week	P1A, P3A (week 9)
	First examiner	Richard Kaandorp
	Permitted resources	A3 summary and a basic scientific, non-programmable, non-graphical calculator, for example: Casio fx-82, Texas Instruments TI-30
	Number of examiners	1
	Assessment	Mark
	Pass mark	55
	Minimal result	55
	Weight	1
	Reassessment	1 (P3A week 9) (P5A August)
	Compensation	No
	Review	Review week 2,4, 4.4
Other information		
Required classroom	Regular classroom	

Unit of Study (UoS) **EATMFC01**	**Feedback Control**
General Information	
Long name of unit of study	Feedback Control
Short name of unit of study	Feedback Control
Code for unit of study OSIRIS	EATMFC01
Teaching Term	P2A, P4A
Registering for educational components	Go to Part 2 “3.6 Registering for educational activities” for more information.
Credits/study load	3 EC / 84 hours
Study hours (contact hours)	16 contact hours3 contact hours exam
Entry requirements	It is expected that the student has mastered basic mathematics skills specifically 1st and 2nd order differential equations, Laplace transforms and calculations with complex numbers.
Content and organization	
General description	In this course students will learn how to design a PID and lag-lead controller. A variety of processes is used to illustrate the design procedure. The controllers will be presented in functional block diagrams and within the time, Laplace and frequency domain. Specific techniques are used, such as notch filtering, wind-up prevention and Smith predictor.
Required literature / description of ‘learning material’	Nise N.S., Control Systems Engineering, John Wiley & Sons (ONLINE Zybooks) Handouts Specific articles about control structures
Recommended literature	-
Required software	MATLAB, Simulink
Cohesion Relationship	Units of study Transfer minor Engineering Systems
Compulsory participation	No, but attendance will be registered
Activities and/or instructional formats	Self-study, Working on assignments and exercises, Modelling with MATLAB - Simulink Work Forms: Lectures, review exercises, discussion
Examinations	
Final Qualifications	C1 Analysis C2 Design
Assessment dimensions / learning outcomes	Dimensions of assessment: • Knowledge and understanding (analysing and defining problems, design of controllers) • Applying knowledge and understanding (design of controllers) • Making judgements (design of controllers) The student can analyse the physical system (first and second order, higher order) and/or a model (linear/ nonlinear, SISO/MIMO).

	The student can apply techniques such as Pole/zero-plot and step/ramp responses in order to determine the requirements of the controlled system. The student can agree on specifications (stability, offset, settling time, overshoot, phase and gain margin) of the controller with the client. The student can apply techniques such as Bode plots (open loop, closed loop) and Nyquist diagrams in order to determine the requirements of the controlled system.	
Assessment criteria	The student will be assessed on answering the questions: • clearly and to the point, including sufficient relevant explanation and depth, comparable with the depth of the literature studied • without irrelevant additional information • using correct equations and models for the situation (for example when to use linear or nonlinear models) • using correct units for quantities in equations, graph labels, etc.	
Information for each exam and modular exam		
Examinations	Exam name	TMES FC Written Exam
	Exam code	TOETS-01
	Registering and deregistering for exam opportunities	Go to Part 2 5.4.1 Registering for exams and modular exams
	Exam format	KENN Knowledge exam on location / written
	Exam type	ANS
	Exam week	P2A, P4A (week 9)
	First examiner	Richard Kaandorp
	Permitted resources	A3 summary and a basic scientific, non-programmable, non-graphical calculator, for example: Casio fx-82, Texas Instruments TI-30
	Number of examiners	1
	Assessment	Mark
	Pass mark	55
	Minimal result	55
	Weight	1
	Reassessment	1 (P4A week 9) (P5A August)
	Compensation	No
	Review	Week 3,4, 4.12
Other information		
Required classroom	Regular classroom	

Unit of Study (UoS) **EATMPM01**	**Practice Modelling and Simulation**
General Information	
Long name of unit of study	Practice Modelling and Simulation
Short name of unit of study	Practice Modelling and Simulation
Code for unit of study OSIRIS	EATMPM01
Teaching Term	P1A, P2A, P3A, P4A
Registering for educational components	Go to Part 2 "3.6 Registering for educational activities" for more information.
Credits/study load	5 EC / 140 hours
Study hours (contact hours)	32 contact hours
Entry requirements	There are no further entry requirements after admission
Content and organization	
General description	PMS covers modelling and simulation with Matlab-Simulink. • General software introduction in Matlab, Simulink • Simulation and analysis a system using different models (i.e. differential equations, state-space and transfer functions) • Analysis of basic cases (exercises at HAN, home-taken, by each student separately) based on the domains treated in AP and IM (i.e. mechanical, electrical and thermodynamic/fluid dynamic) • Performing system verification and validation • Perform parametric analysis on systems for using loops. • Creating an efficient connection between scripting and Simulink modelling • Effectively plotting relevant data • Simulation of feedback control loop with Simulink (block diagram, PID-block) using models in DE or TF • Analysis and design of control parameters based on course FC • Using autotune option with PID-block
Required literature / description of 'learning material'	Lecturing material and hand-outs available on Onderwijs Online
Recommended literature	-
Required software	Matlab, Simulink
Cohesion Relationship	Units of study Transfer Minor Engineering Systems
Compulsory participation	No, but attendance will be registered
Activities and/or instructional formats	Home study, working on practical assignments Work forms: Lectures, interactive simulation exercises, assignments, reporting, presentations
Examinations	
Final Qualifications	C2 Design C3 Realisation

Assessment dimensions / Learning outcomes	Dimensions of assessment: Applying knowledge and understanding (design, testing) The student is able to analyse, model, verify and validate a given system (in terms of differential equations) which can be from different application fields (i.e. mechanical, electrical and thermodynamic/fluid dynamic) in modelling software *(e.g. Matlab, Simulink or similar tools).* The student is able to convert the system into different models i.e. state-space and transfer function models. The verification is performed with logical inputs along with logical references. The validation is done by importing, filtering and comparing relevant datasets with the model data and/or by performing sensitivity analysis on the system parameters. The student is able to analyse and design a PID-controller for feedback control, using modelling software.	
Assessment criteria	The student will be assessed on the criteria (questions) mentioned on the evaluation form. (next page)	
Information for each exam and modular exam		
Examinations	Exam name	TMES PMS Home-Taken Exam
	Exam code	TOETS-01
	Registering for re-exam OSIRIS	Go to Part 2 5.4.1 Registering for exams and modular exams
	Exam format	PROD Online digital product
	Exam type	Hand in
	Exam week	P2A, P4A (week 9)
	First examiner	Bas Hetjes
	Permitted resources	Everything, but all results must be the student's own work
	Number of examiners	1
	Assessment	Mark
	Pass mark	55
	Minimal result	55
	Weight	1
	Reassessment	1 (P4A week 9) (P5A August)
	Compensation	No
	Review	Evaluation form week 3,4, 4.12
Other information		
Required classroom	Regular classroom	

TMES Practice Modelling and Simulation

Evaluation and Awarding Marks
Name, first name…….
Student number …….

	Mark	**Motivation**	**Weight factor**
Knowledge and understanding **C1: Analysis** Has the candidate acquired appropriate knowledge to model the system (differential equation, transfer function, state space)? Is the modelled system represented in the software tool clearly, effectively and error free? Has the candidate analysed the feedback control system?			1
Applying knowledge and understanding **C2: Design** Is the model verified using logical inputs with sufficient justification? Has the candidate sufficient knowledge to validate the system using relevant data (literature, experiment)? Has the candidate performed a justified sensitivity analysis on the system parameters? Has the candidate sufficient knowledge about PID-controller design? Do the results show complexity and depth?			1
Mark total			

Date : Signature examiner :

Unit of Study (UoS) **EATMPR01**	**Transfer Minor Engineering Systems Project**
General Information	
Long name of unit of study	Transfer Minor Engineering Systems Project
Short name of unit of study	Project
Code for unit of study OSIRIS	EATMPR01
Teaching Term	P1A, P2A, P3A, P4A
Registering for educational components	Go to Part 3 “Regulations for Education, exams and modular exams OSIRIS” for more information.
Credits/study load	10 EC / 280 hours
Study hours (contact hours)	16+32 contact hours and 4 hours presentation
Entry requirements	-
Content and organization	
Professional task	Evaluate relevant literature and Analyse and validate the model
(Professional) products	Project plan Model Report (literature review) and presentation
General description	The students have to carry out an assignment, of which model development, analysis and control are essential parts. Experimental validation will be used to check model behaviour. The Project serves to challenge the students to apply their knowledge and skills on a research-oriented problem. Research and scientific skills are included to support the project work. Part of the project is the peer review: In a peer review session the contribution of the group members to the project is determined by the group members themselves. The focus is on content and collaboration. The tutor is also present. Students should be aware of their own functioning within the project group, so should arrange peer feedback within their project group regularly.
Required literature / description of ‘learning material’	Grit. R. (2021). *Project Management, a Practical Approach*. Noordhoff. Elling. R., et. al. (2011). *Report Writing for Readers with Little Time*. Noordhoff. Baarda. D.B. (2010). *Research this is it!* Noordhoff https://www.youtube.com/@GradCoach play list: https://www.youtube.com/playlist?list=PLvcb33xNTVUk-Bj4Y9iuU0n46LowYtjb5
Recommended literature	-
Required software	MATLAB Simulink
Cohesion Relationship	Units of study Transfer Minor Engineering Systems
Compulsory participation	Yes
Activities and/or instructional formats	Research Collaboration in the group work Work Forms: Lectures, Assignment
Examinations	

Final Qualifications	C1. Analysis C2. Design C3. Realisation C5. Management C6. Advice C7. Research C8. Professionalisation
Assessment dimensions / learning outcomes	Dimensions of assessment: • Knowledge and understanding (Applied Research) • Applying knowledge and understanding (Analysing and defining problems, Design) • Making judgements (Analysing and defining problems) • Communication • Learning skills (Professional development) Learning outcomes: The student presents a clear justification of the project approach. The student plans effectively. The student carries out a project based on a Applied research oriented problem in which model development and analysis are essential parts by applying knowledge and understanding. The system descriptions are found via white box modelling or step response experiments. The student structures the working process in the engineering domain and is able to effectively communicate the core findings. The student is able to search systematically for information to be used in the project. The student communicates the project findings in a clear and structured manner in oral and written forms. The student reflects on their role in the project and on their professional development.
Assessment criteria	The student will be assessed on the criteria mentioned on the evaluation forms. The result of the project is determined by **3 exams**: **Project Plan:** For the Project Plan a pass or no pass will be defined by the examiner. The project plan has to be sufficient before starting the execution of the project. **Group Contribution:** For the contribution of the individual student to the group a pass or no pass will be defined by the examiner. The examiner can use the outcome of the peer review, but also can deviate from it. **Report and Presentation:** For the Report and Presentation a group mark will be given by the examiners. The individual student mark is equal to the group mark provided that the student's Group Contribution is sufficient (pass). If the Group Contribution of the student is insufficient, no mark will be given and the student is unable to finish the project.
Information for each exam and modular exam	

Examinations	Exam name	EATMPR01 Project Plan	EATMPR01 Group Contribution	EATMPR01 Report and Presentation
	Exam code	TOETS-01	TOETS-03	TOETS-02
	Registering and deregistering for exam opportunities	Go to Part 2 5.4.1 Registering for exams and modular exams		
	Exam format	PROD Online / digital product	PART Participation on location	PRES Presentation on location
	Exam type	Hand in		Hand in
	Exam week	P2A, P4A (week 1)	P2A, P4A (week 10)	P2A, P4A (week 9 / 10)
	First examiner	Frank Poelmans		
	Permitted resources	Everything, but all results must be the student's own work		
	Number of examiners	1	1	2
	Assessment	Pass	Pass	Mark
	Pass mark	Pass	Pass	55
	Minimal result	Pass	Pass	55
	Weight	0	0	1
	Reassessment	1 (P2A week 2.4) (P4A week 4.4)	-	1 (P5A week 4.11/4.12)
	Compensation	No	No	No
	Review	Feedback after presentation / Evaluation form in week 3.4, 4.12		
Other information				
Required classroom	Regular classroom			

TMES Project plan
Evaluation and Awarding Marks
Name, first name…….
Topic……

	Pass	Motivation	Weight factor
Applying knowledge and understanding **C1: Analysis** **C2: Design** **C7: Research** Do the candidates show understanding about the topic? Has the problem been clearly defined? Is the background relevant to the problem? Is the project objective clear and correct?			1
Making judgments **C1: Analysis** **C2: Design** **C7: Research** Have the students presented a clear justification for their approach? Have reliable sources been used to come up with an approach? Do the students account for different alternatives before finalizing the approach?			1
Communication **C5: Management** **C6: Advice** Do the students plan effectively? Do the students show clarity in the explanation?			1
Learning Skills **C8: Professionalisation** Do the students display initiative, deadline handling? Is the problem owner involved adequately?			1
Pass total For a pass all items should be sufficient			

Date :
Signature examiner :

TMES Report and Presentation

Evaluation and Awarding Marks
Name, first name……
Student number……..
Topic……

	Mark	Motivation	Weight factor
Knowledge and understanding **C1: Analysis** **C2: Design** **C3: Realisation** **C7: Research** Does the student shows that he has a good overview of the topic? Are the methods and techniques for modelling and simulation properly used? Does the student show sufficient familiarity with current, basic knowledge? Have the central questions been answered? Does the student show sufficient analytical skills?			1
Making judgments **C1: Analysis** **C2: Design** **C7: Research** Does the student use references? Is the student able to validate the process model? Does the student has critical appraisal that has been successfully incorporated? Is the student able to correctly interpret the results?			1
Communication **C5: Management** **C6: Advice** Can the student communicate their project findings and defend choices in a clear and structured manner in oral and written forms? Is the student able to present the results to a problem owner? Is the student able to work in a project team? Is the text clearly understandable and in grammatically sound language? Have the formal requirements for literary sources been met?			1

Learning Skills **C8: Professionalisation** is the student able to reflect on their role in the project and on their professional development? Is the problem owner involved adequately? Does the student show problem solving skills? Is the student self-reliant? Does the student reflect on the choices made?			1
Final Mark (group) **For a pass all marks should be sufficient**			

Date :

Signature examiner 1 :

Signature examiner 2 :