GHENT UNIVERSITY

Faculty of Engineering and Architecture

Diploma Supplement

This diploma supplement follows the model developed by the European Commission, Council of Europe and UNESCO/CEPES. The purpose of the supplement is to provide sufficient independent data to improve the international 'transparency' and fair academic and professional recognition of qualifications (diplomas, degrees, certificates etc.). It is designed to provide a description of the nature, level, context, content and status of the studies that were pursued and successfully completed by the individual named on the original qualification to which this supplement is appended. It should be free from any value judgements, equivalence statements or suggestions about recognition. Information in all eight sections should be provided. Where information is not provided, an explanation should give the reason why.

1. INFORMATION IDENTIFYING THE HOLDER OF THE QUALIFICATION

1.2. Given Name(s), 1.1. Family Name(s)

1.3. Date of Birth

1.4. Student Identification Number or Code

2. INFORMATION IDENTIFYING THE QUALIFICATION

2.1.	Name of Qualification and (if applicable) Title Conferred (in original language)	Master of Electromechanical Engineering — Main Subject Control Engineering and Automation The holder of this degree can use the title of Master of Science (MSc). The holder of this degree is also authorised to bear the title of 'Burgerlijk ingenieur' (Dutch).
2.2.	Main Field(s) of Study for the Qualification	Engineering
2.3.	Name and Status of Awarding Instution(s)	Universiteit Gent (*Ghent University*, Belgium), Higher Education Institution of the Flemish Community with an ex officio recognition
2.4.	Name and Status of Instution(s) (if different from 2.3.) Administering Studies (in original language)	cf. 2.3.
2.5.	Language(s) of Instruction/Examination	The language of instruction/examination of this study programme is English. The language of instruction of the respective modules or units studied by the student, is mentioned in item 4.3.

3. INFORMATION ON THE LEVEL OF THE QUALIFICATION

3.1. Level of Qualification

Master

The degree of Master is a “Second Cycle Qualification” within the framework of the European Higher Education Area (Bologna Process). It also is a “qualification of level 7 of the European Qualifications Framework for Lifelong Learning”, the descriptions of the study programmes leading to the master's degree which are validated by decree in the Flemish Community being laid

down as qualifications of level 7 in the Flemish Qualifications Structure, as mentioned in the Decree of 30 April 2009 concerning the Qualifications Structure.

3.2. Official Length of Programme

The official length of this study programme corresponds to 120 ECTS credits. The higher education credit system of the Flemish Community is entirely in line with the European Credit Transfer and Accumulation System (ECTS).

3.3. Access Requirements

Diploma on the basis of which the student was admitted to his study programme

The student obtained admission to this study programme on the basis of the diploma of Bachelor of Science in de ingenieurswetenschappen: werktuigkunde-elektrotechniek *(Bachelor of Science in Electromechanical Engineering)*, awarded by Universiteit Gent (*Ghent University,* Belgium) on 12 September 2019.

General admission requirements to this study programme

1. **Immediate Admission**
   - Bachelor in de ingenieurswetenschappen, afstudeerrichting: werktuigkunde-elektrotechniek
   - Bachelor in de ingenieurswetenschappen: werktuigkunde-elektrotechniek
2. **Upon Approval by the Faculty: Immediate Admission**
   - Bachelor in de ingenieurswetenschappen, afstudeerrichting: elektrotechniek
   - Bachelor in de ingenieurswetenschappen, afstudeerrichting: werktuigkunde
3. **Admission Subject to Passing a Preparatory Course**
   a. programme new structure
      - Bachelor in de bio-ingenieurswetenschappen
      - Bachelor in de fysica
      - Bachelor in de fysica en de sterrenkunde
      - Bachelor in de industriële wetenschappen, afstudeerrichting: elektromechanica
      - Bachelor in de industriële wetenschappen: elektromechanica
      - Bachelor in de ingenieurswetenschappen (KMS)
      - Bachelor in de nautische wetenschappen
      - Bachelor in de wiskunde
      - Een diploma van een opleiding 'Bachelor of Science in de ingenieurswetenschappen' (met inbegrip van 'architectuur')
      - Master in de nautische wetenschappen

   b. programme old structure
      - Licentiaat in de natuurkunde
      - Licentiaat in de nautische wetenschappen
      - Licentiaat in de wiskunde

4. INFORMATION ON THE CONTENTS AND RESULTS GAINED

4.1. Mode of Study

This study programme can be taken through a standard learning track. This is a learning track in which the optimal succession, feasibility and organisation of the education offered in this programme is pursued. Students can also opt for a personalised learning track. This is a learning track deviating from the standard learning track, in order to permit students to take the programme at their own pace. For students combining work and study, special facilities are offered if possible.

4.2. Programme Requirements

Level Descriptors

This programme, leading to the degree of Master in academic education, has the following level descriptors (Codex Higher Education, Article II.141, 4° and the Decree of April 30, 2009 regarding the qualification, Article 6) :

a) mastering general competences at an advanced level such as the ability to reason and act in a scientific manner, the ability to handle complex problems, the ability to reflect on one's own thoughts and work and the ability to translate this reflection into the development of more adequate solutions, the ability to communicate one's own research and solutions to peers and laypersons and the ability to develop an opinion in an uncertain context;
b) mastering general scientific competences at an advanced level such as the ability to apply research methods and techniques, the ability to design research, the ability to apply paradigms in the domain of sciences or the arts and the ability to indicate the limits of these paradigms, the ability to be original and creative in view of the continuous acquisition of knowledge and insights and the ability to collaborate in a multidisciplinary environment;
c) an advanced understanding of and insight in the scientific discipline-specific knowledge inherent to a certain domain in sciences or the arts, insight in the most recent knowledge of the subject area or parts of it, the ability to follow and interpret the direction in which theory development evolves, the ability to make an original contribution to the knowledge in one or several parts of the subject area and having the specific skills characteristic for the subject area such as designing, researching, analysing and diagnosing;
d) master the competences necessary either for independent scientific research or for the independent practice of the arts at the level of a junior researcher or artist, or master the general and specific professional competences necessary for independent application of scientific or artistic knowledge at the level of a junior professional.

Learning Outcomes of the Study Programme

Competences in one/more scientific discipline(s)

Master and apply advanced knowledge in the own engineering discipline in solving complex problems.

Apply Computer Aided Engineering (CAE) tools and advanced communication instruments in a creative and purposeful way.

Have a thorough insight in the interactions between different electromechanical parts and energy conversions of complex systems.

Have a thorough knowledge of measurement techniques, sensors, actuators and ICT and the ability to apply the knowledge.

Be familiar with the management of companies and operations.

Specifically for main subject 'Mechanical Energy Engineering': Have a thorough insight in mechanical and thermodynamical energy conversions, fluid dynamics, heat transfer and combustion and apply the knowledge to complex problems.

Specifically for main subject 'Electrical Power Engineering': Have a thorough insight in the production, distribution, conversion and use of electrical power and apply the knowledge to complex problems.

Specifically for main subject 'Mechanical Construction': Have a thorough insight in the design, behaviour and manufacturing of constructions and machines and apply the knowledge to complex problems.

Specifically for main subject 'Control Engineering and Automation': Have a thorough insight in the design and behaviour of control loops and of system dynamics and apply the knowledge to complex problems.

Specifically for main subject 'Maritime Engineering': Have a thorough insight in the design, construction, functioning and exploitation of maritime systems.

Scientific competences

Analyse complex problems and formulate them into concrete research questions.

Consult the scientific literature as part of the own research.

Select and apply the appropriate models, methods and techniques.

Develop and validate mathematical models and methods.

Interpret research findings in an objective and critical manner.

Intellectual competences

Independently form an opinion complex situations and problems, and defend this point of view.

Apply knowledge in a creative, purposeful and innovative way to research, conceptual design and production.

Critically reflect on one's own way of thinking and acting, and understand the limits of one's competences.

Stay uptodate with the evolutions in the discipline to elevate the own competences to expert level.

Readily adapt to changing professional circumstances.

Competences in cooperation and communication

Have the ability to communicate in English about the own field of specialisation.

Project management: have the ability to formulate objectives, report efficiently, keep track of targets, progress of the project,...

Have the ability to work as a member of a team in a multidisciplinary workingenvironment, as well as being capable of taking on supervisory responsibilities.

Report on technical or scientific subjects verbally, in writing and using graphics.

Societal competences

Act in an ethical, professional and social way.

Recognize the most important business and legal aspects of the own engineering discipline.

Understand the historical evolution of the own engineering discipline and its social relevance.

Profession-specific competence

Master the complexity of technical systems by using system and process models.

Reconcile conflicting specifications and prior conditions in a highquality and innovative concept or process.

Synthesize incomplete, contradictory or redundant data into useful information.

Possess sufficient ready knowledge and understanding to evaluate the results of complex calculations, or make approximate estimates.

Pay attention to entire life cycles of systems, machines, and processes.

Pay attention to sustainability, energyefficiency, environmental cost, use of raw materials and labour costs.

Pay attention to all aspects of reliability, safety, and ergonomics.

Have insight into and understanding of the importance of entrepreneurship.

Show perseverance, innovativeness, and an aptitude for creating added value.

Integrate the advanced knowledge of mechanical and electrical systems and ICT in order to design, implement and exploit technological innovations.

Be familiar with the energy efficiency of (electrical, mechanical and thermal) energy conversion systems and distribution systems.

Learning Outcomes of the Course Units

Clean Technology

Understanding how resource consumption and selection, process efficiency and emission patterns affect the contribution of technology to environmental sustainability. Also the importance of technology within industrial society has to be understood.

Have a knowledge of the nowadays (global) relevant environmental issues

Comprehend the concepts: industrial ecology, green chemistry (and its principles), green (chemical) engineering & clean technology

Comprehend and being able to apply approaches for energy integration & mass integration (source-sink mapping and mass exchange network synthesis)

Comprehend management approaches that improve sustainability, more specifically: design for sustainability (D4S) and, ecomanagement and audit scheme (EMAS)

Grasp tier 1 and tier 2 environmental performance tools and release quantification methods

Grasp the concept of life cycle assessment and all its aspects

Being able to conduct a life cycle assessment to a certain extent (this with the aid of software)

Grasp the concept of exergy and exergy analysis. Being able to quantify the exergy amount of a flow to the extent defined by presented data and formulae

Computer Control of Industrial Processes

To understand the effect of analog-to-digital and digital-to-analog converters on system dynamics.
To be able to develop a mathematical model formulation through signal processing techniques (identification methods).
To evaluate when model-based and non-model based control should/can be applied.
To critically assess the choice for trade-off between performance of closed loop and robustness to disturbances and process model variations.
To possess insight into the choice between model based control strategies (predictive control) and to apply them in practice.
To identify the interactions between sub-processes and to understand the effect of this interaction on the global performance of the total process.
To apply simplifying techniques to complex systems and to analyze the effects of these simplifying assumptions.
To be able to communicate and cooperate within a team, to manage a project towards the end-objectives and to report the obtained results in a critical objective assessment.
To be able to use control-engineering related software (Matlab/Simulink)

Controlled Electrical Drives

Understanding the differences and similarities between space vectors and time phasors for sinusoidal and non-sinusoidal supply
Understanding the principle of current supply versus voltage supply, schemes and modulation principles for inverters, equivalent circuits for inverters, V/F supply, vector control and field orientation, DTC (direct torque control), servo drives, shaded pole motor, p.m. excitation, hystereis motor, stepping motors and their characteristics
Gaining insight into the differences and similarities between space vectors and (time) phasors, voltage and temperature limits for starting, restraints with classical starting methods, power electronic starting methods, voltage and speed control, current and torque control, forced and load commutation in VSI and CSI, differences and similarities between controlled drives and servo drives, small versus large commutator machines, AC commutator machines versus DC commutator machines, small versus large induction machines, small versus large synchronous machines, effects of power electronic supply on the machine and vice-versa, stepping motors versus classical motors

Displacement Pumps, Compressors and IC Engine Fundamentals

Choose a suitable pump, compressor or internal combustion engine type depending on the application and determine its basic dimensions.
Calculate the margin to cavitation for a pump installation and if necessary propose the required adaptations.
Explain trends in engine design and emission legislation and explain why a specific engine design would be chosen.
Determine the effect of fuel properties on engine combustion.
Execute measurements on positive displacement machinery and interpret them and perform thermodynamic analyses.

Dynamics of Electrical Machines and Drives

Understanding the concepts of local stability, static and dynamic stability, input-output stability, field orientation and vector control, transient and subtransient dynamics of machines; pulsating loading of machines; voltage surges in machines.

Understanding the dynamic behaviour of DC machines, induction and synchronous machines.
Calculation of transient phenomena in electrical circuits; calculation of transients via modelling of of DC machines; modelling of induction machines; modelling of synchronous machines.

ICT and Mechatronics

Understand how basic components of complex mechatronic systems work, especially on the ICT side
Name relevant techniques and recognize the dangers for multiple-task management
Understand basic communication techniques: setting up communication, choosing information channel and information content
Discriminate between different task organizations: layers, parallel threads, object oriented
Represent simple motion systems with matrix groups and realize their limitations
Devise simple plans by backwards induction.
Design and implement computer-based motion control strategies
Understanding the reasoning and assumptions behind correct data handling and interpretation, information extraction and machine learning
Propose, analyze, select and implement hard- and software solutions for sensing and actuation in a newly encountered mechatronic system
Efficiently report on project advances, clearly describe technical solutions.

Introduction to Eco-chemistry

Have insight in local and global environmental issues
Have intellectual and practical competences in measuring and calculation of environmental contaminants in soil, water and air.
Be able to explain sources, effects and reference values of contaminants in in the environment
Have insight in the physico-chemical parameters that determine the distribution and transport of contaminants between the different environmental compartments.

Introduction to Eco-toxicology and Risk Assessment

Understand physical, chemical, biological and ecological processes that determine exposure, effects and risks of chemical to man and the environment
Know how theoretical foundations of risk assessment are brought into practice in legislation

Linear Systems

Knowing and understanding the consequences of the linearity and stationarity of a system; calculating the state trajectory of a linear stationary system.
Understanding when, and checking if a linear stationary system is controllable; stabilising it using linear state feedback.
Understanding when, and checking if a linear stationary system is observable; designing a Luenberger state observer/estimator.
Designing an optimal controller without and with input perturbations.
Understanding and working with expectations, covariance matrices, and optimal linear estimators.
Designing a Kalman-Bucy filter under output noise.
Designing the optimal combination of optimal controller and optimal state estimator.

Manufacturing Planning and Control

indicate the strategic importance of production planning and control for a company
analyse and control complex production systems by using mathematical models
quantify the impact of variability on the performance of a production system

distinguish and correctly apply methods and tools for planning production and inventory at strategic, tactical and operational level
assess the usefulness of the different methods and tools for shop floor control in varying situations

Master's Dissertation

Define, study and analyse the research problem in a specific domain.
Find an appropriate methodology, in accordance with the applicable scientific norms of the specific field of study.
Critically analyse, formulate, study, execute and/or process different aspects in the execution of research (literature search, topical study, research and the reflection on the research, experiments, experimentations, designs, simulations, results, conclusions,...).
Render and synthesise the results concisely.
Communicate adequately on the research, the results and problems, present and found them, both to colleagues as to laypeople.
Self-assessment with adequate and critical self-correction and objectivity.
Give proof of independency, motivation, dedication, drive to innovation and creativity, initiative and perseverance.

Mechanical Vibrations

Modelling of rotating and non-rotating mechanical systems based on Langrange's technique.
Calculate vibration levels of mechanical structures subjected to dynamic loads.
Perform a modal analysis and formulate structural modifications for continuous and discrete systems.
Design of vibration isolation and vibration absorption devices.
Identify modal parameters from an experiment
Apply model structure preserving reduction techniques.

Modelling and Simulation of Dynamical Systems

Insight in how to model a complicated system: simplest possible accurate system model.
Use of compositionality, abstraction, hierarchy to develop mathematical models of systems, to be able to implement for simulation, to reduce and to validate.
Use of Euler-Lagrange methods, classical electrical network analyses, and bond graphs of electromechanical systems.
To be able to implement mathematical models of continuous systems for simulation purposes using numerical integration routines.
Use the laws of preservation for the validation of models and simulation programs; efficient use of simulation tools such as Simulink.
Develop system models for systems having asynchronous events using automata and Petri nets.
Use of dynamic system models of production processes for the design and validation of supervisors.
Design model based control for discrete time system models for hybrid systems.
Use of computer platforms for the implementation of simulation programs.

Nonlinear Systems

Recognizing typical behaviour of nonlinear systems (multiple equilibrium points, limit cycles, chaos, ...)
Using graphical and analytical techniques to investigate dynamical behaviour
Qualitatively and quantitatively analysing nonlinear systems
Recognize and identify the most important bifurcations for parametrized systems

Drawing a bifurcation diagram and phase portrait

Conducting a stability study with linear and nonlinear methods

Being comfortable with intrinsically nonlinear notions

Examine nonlinear systems in a creative and critical manner

Power Electronics

CONCEPTS: simple designs of converters and passive components inductors and transformers with ferrite
INSIGHTS: Understanding voltage and current waveforms

SKILLS:electronic and thermal aspects

Rational Use of Materials

Understanding the impact of material properties on the material selection process during design and how this affects the recyclability of the final product
Knowledge on advanced recycling technologies and how material properties can be used during recycling as well
Understanding the difference between the recyclability of special/precious metals and bulk materials. Insights in complete life cycle and the role of recycling in life cycle analysis
Being able to enter a broad societal discussion concerning environmental issues, recycling and material scarcity

Servo Systems and Industrial Robots

To be able to model the spacial movement of an object

Typical aspects of drives, sensors and controllers, which are used in servo control

Sustainable Energy and Rational Use of Energy

To demonstrate the importance of sustainable energy with respect to the amount of fossile energy available, environmental effects and the climate change.
To describe which forms of (non-)sustainable energy are available and to estimate in which quantity they are available.
To describe the scientific principles behind the conversion of sustainable energy sources (solar irradition, wind, ...) into useful energy (electricity, mechanical power, ...).
To predict and to calculate the energy production of sustainable energy installations (photovoltaic, wind, hydro, ...).
To explain the need and the problems of energy storage with respect to sustainable energy production.
To list a number of ways to reduce energy use through the rational use of energy.

To predict and calculate the reduction in energy use by switching to a more rational use of energy.

Turbomachines

Derive basic functioning of turbomachines and the flow in their components

Derive parameter choice and layout of fans, steam turbines, pumps, hydraulic turbines and wind turbines
Calculate the flow in a turbomachine using one-dimensional analysis

Water and Air Quality Engineering

Critically evaluate problems in water and air quality and subsequently design adequate processes to address the said problem
Apply interdisciplinary knowledge *e.g.* chemistry, unit operations and mathematics etc. to

evaluate problems related to water and air quality.

Recognize the strengths and weaknesses of implemented techniques and critically evaluate solutions obtained.

Assigning pollution/emissions to corresponding origins/processes and propose an adequate abatement strategy

Master's Dissertation

The master's programme is completed with a master's dissertation (in Dutch: 'masterproef'), the study load of which equals at least one fifth of the total amount of ECTS credits of the study programme, with a minimum of 15 ECTS credits and a maximum of 30 ECTS credits.

4.3. Programme Details and the Individual Grades/Marks/Credits Obtained

The study programme components and their corresponding credits (study load), individual grades attained and percentile. The teaching language is only mentioned if it differs from the teaching language of the training programme (as mentioned in 2.5.).
For study programme components taken at another higher education institution than Ghent University, the name of the higher education institution is mentioned.

Academic year 2018-2019

Study programme component	Credits	Grade	Percentile
Clean Technology	5	14	52(19)29
Computer Control of Industrial Processes	6	17	66(10)24
Controlled Electrical Drives	6	10	0(19)81
Displacement Pumps, Compressors and IC Engine Fundamentals	6	10	0(15)85
ICT and Mechatronics	6	15	53(21)26
Introduction to Eco-toxicology and Risk Assessment	3	13	N/A
Linear Systems	6	12	19(19)62
Mechanical Vibrations	6	12	17(15)68
Modelling and Simulation of Dynamical Systems	6	17	65(18)17

Academic year 2019-2020

Study programme component	Credits	Grade	Percentile
Dynamics of Electrical Machines and Drives	6	15	N/A
Introduction to Eco-chemistry (Dutch)	3	13	N/A
Manufacturing Planning and Control	6	11	13(16)71
Nonlinear Systems	6	13	24(11)65
Power Electronics	3	16	67(21)12
Rational Use of Materials	5	13	23(13)64
Servo Systems and Industrial Robots	3	13	21(19)60
Sustainable Energy and Rational Use of Energy	4	15	34(13)53
Turbomachines	6	13	35(12)53
Water and Air Quality Engineering	4	16	59(12)29
Master's Dissertation: Design, development and programming of a low-cost real-time measurement platform for hand pose estimation	24	14	N/A

In some cases, the number of credits listed above (possible exemptions added (see 6.1.)) can slightly differ from the nominal size of the study programme (see 3.2.). This may be caused by student mobility (exchange) or a programme reform during the period of study. In either case, the student has complied with the study load of the complete programme.

Minor Environment and Sustainable Development

- Water and Air Quality Engineering
- Clean Technology
- Sustainable Energy and Rational Use of Energy
- Introduction to Eco-chemistry
- Introduction to Eco-toxicology and Risk Assessment
- Rational Use of Materials

4.4. Grading Scheme and, if available, Grade Distribution Guidance

Passing criteria for a course unit:
A student passes a course with a score of at least 10 out of 20 or, in case of non-numerical assessment, with the formulation 'geslaagd' (in English: 'passed'). The latter, non-numerical, grading system is only used in exceptional cases, i.e. if the university board has decided that the assessment of a certain course must be expressed as 'geslaagd' (in English: 'passed') or 'niet-geslaagd' (in English: 'not-passed'), due to its specific nature. On passing a course, a student obtains a credit certificate for that course, which contains information on the identity of the student, the nature of the study programme, the course unit, the number of credits obtained and the final evaluation awarded. Credit certificates obtained at Ghent University have unlimited validity at Ghent University.

Criteria for obtaining the degree:
Without prejudice to the deliberation competence of the Board of Examiners, a student who has met the passing criteria for each course obtains the Bachelor's or Master's degree. The board of examiners can award a grade of merit: cum fructu (op voldoende wijze), cum laude (met onderscheiding), magna cum laude (met grote onderscheiding), summa cum laude (met de grootste onderscheiding).

The percentile and ECTS grading scale
The Percentile A(B)C is the fraction of passed students achieving a grade that is A: strictly lower, B: equal, C: strictly higher. The conversion of this percentile to an ECTS-grade is as follows:

if $0 \leq A + B/2 < 10$ then E
if $10 \leq A + B/2 < 35$ then D
if $35 \leq A + B/2 < 65$ then C
if $65 \leq A + B/2 < 90$ then B
if $90 \leq A + B/2 \leq 100$ then A

4.5. Overall Classification of the Qualification (in original language)

Cum laude (met onderscheiding), with 682/1000, on 10 September 2020

5. INFORMATION ON THE FUNCTION OF THE QUALIFICATION

5.1. Access to Further Study
Data unavailable.

5.2. Professional Status

Implications for the holder of this diploma as to access to regulated professions

Law, Decree or European Guidelines the Study Programme complies with

Not applicable.

Legal Requirements regarding Professional Duties the Diploma complies with

Not applicable.

Title accorded in compliance with article II.76 of the Higher Education Code

The holder of this degree is authorised to bear the title of 'Burgerlijk ingenieur' (Dutch).

Quality Label(s)

EUR-ACE®Master (EURopean ACcredited Engineering Master)
The EUR-ACE label was accredited to this programme by the Commission des titres d'ingénieur (Cti), under the auspices of the European Network for Accreditation of Engineering Education (ENAEE).
EUR-ACE® is a framework and accreditation system that provides a set of standards that identifies high-quality engineering degree programmes in Europe and abroad.
www.enaee.eu

6. ADDITIONAL INFORMATION

6.1. Additional Information

Information about exemptions and reduction in study load

Not applicable.

Additional information on the jointly organised study programme

Not applicable.

6.2. Further Information Sources

Contact details diploma awarding institution(s)

Universiteit Gent (*Ghent University*)
Sint-Pietersnieuwstraat 25
9000 Gent
Belgium
http://www.ugent.be

Contact details NARIC

NARIC-Vlaanderen is the Flemish unit within the NARIC-network of the European Economic Area. NARIC is the acronym for National Academic (and Professional) Recognition and Information Center, established in 1984 by the European Commission of the European Union. The main task of the NARIC is to inform about the academic and professional recognition of diplomas.

NARIC-Vlaanderen
Hendrik Consciencegebouw
Koning Albert II-laan 15

B-1210 Brussel
Tel. +32 2 553 98 19 / +32 2 553 98 18
Fax. +32 2 553 98 45
e-mail: naric@vlaanderen.be
website: http://www.ond.vlaanderen.be/naric/

Website of the Register of Higher Education (Article II.170 Higher Education Code)

http://www.hogeronderwijsregister.be,
mentioning among further facts the data concerning the course's accreditation and recognition

7. CERTIFICATION OF THE SUPPLEMENT

7.1. Date	10 September 2020
7.2. Signature	
	Prof. Dr. Rik Van de Walle
7.3. Capacity	Rector Universiteit Gent
7.4. Official Stamp or Seal	

Flanders (Belgium)

Belgium is a federal state with three communities and three regions:

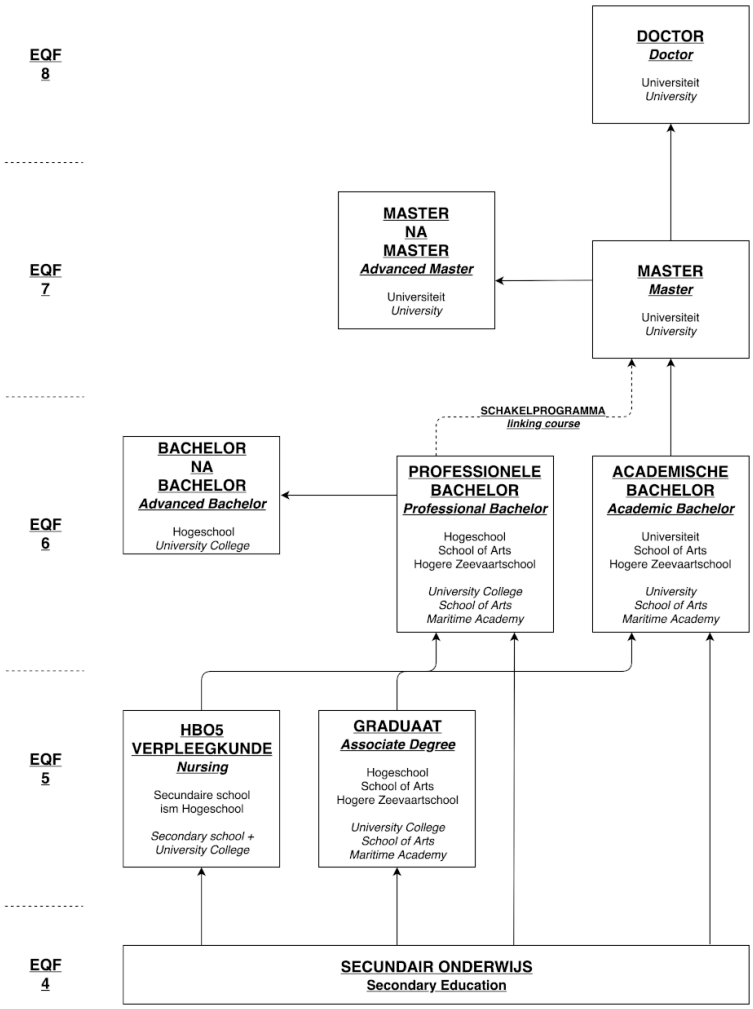
- the Flemish ("Vlaanderen"), French ("Fédération Wallonie-Bruxelles") and German Community ("Deutschsprachigen Gemeinschaft Belgiens");
- the Flemish, Walloon and the Brussels-Capital Region;

Next to the 3 communities and the 3 regions, there are also four language areas, namely the Dutch, French, German and bilingual (Dutch –French Brussels Capital) language area.

Since 1989 the three Communities have acquired full authority and competency for education.
Flanders is responsible for education in the Flemish Region, including the Flemish institutions in the territory of the Brussels-Capital Region.

Higher Education in Flanders

Higher education comprises programmes that lead to an Associate's, Bachelor's, Master's or Doctor's degree. It also comprises programmes leading to a Teacher's degree.



The university colleges offer programmes in higher vocational education that lead to an Associate's degree and programmes in higher professional education that lead to a Bachelor's degree.

The universities offer academic programmes that lead to a Bachelor's or a Master's degree.

Within the framework of a School of Arts, University Colleges also offer academic Bachelor's and Master's programmes in the fields of study of 'Audiovisual and Visual Art' and 'Music and Performance Arts'.

The Hogere Zeevaartschool offers both professional and academic programmes in the field of study of 'Nautical sciences'.

Associate degree programme

Higher vocational education (associate degree programmes) has a professional orientation and sits between secondary education and a bachelor with professional orientation. Up to and including academic year 2018-2019 higher vocational education is organised through a collaboration between a university college and a centre for adult education, as of academic year 2019-2020 it is organized exclusively by the university colleges. The exception to this rule is the Associate degree programme in nursing that is collectively organized by at least one secondary school for full time education and one university college that is allowed to organise the Bachelor of Nursing.
A programme in higher vocational education leads to a recognized education qualification of qualification level 5 of the Flemish Qualifications Framework and consists of at least one recognized professional qualification of qualification level 5. The programmes are completed with an Associate's degree.

Associate degree of Teaching for secondary education

This programme is offered by university colleges and is only accessible for prospective teachers that can proof relevant experience in a technical or practical subject. It is a programme of 90 credits, 30 of which are dedicated to teaching practice.

Bachelor

Bachelor's programmes have either a professional or an academic orientation.

Programmes with a professional orientation are geared towards general training and the acquisition of professional knowledge and competencies, rooted in the application of scientific or artistic knowledge, creativity and practical knowledge. More specifically, Bachelor's programmes with a professional orientation aim to bring students to a level of general and specific knowledge and competencies required to practice a particular profession or a group of professions independently. The application of European, federal and Flemish legislation regarding the professional practice is guaranteed.
After a Bachelor's programme an advanced Bachelor's programme can be followed. These programmes provide a broadening or a specialization of the bachelor's programme.

Programmes with an academic orientation are geared towards general training and the acquisition of academic or artistic knowledge and competencies typical for functioning in a domain of sciences or the arts. Programmes with an academic orientation are based on scientific research.
More specifically, Bachelor's programmes with an academic orientation aim to bring students to a level of knowledge and competencies, typical for scientific or artistic functioning in general and for a specific domain in sciences or in the arts in particular. The goal is for students to continue to study in a Master's programme or to prepare them for the labour market.

Bachelor of Teaching for nursery, primary or secondary education

The programmes for nursery and primary education train class teachers who can teach all subjects.
The three Bachelor's programmes are organized by university colleges. The programmes consist of 180 credits, 45 of which must be dedicated to teaching practice.

Master

Master's programmes have an academic orientation but may additionally have a professional orientation.

Master's programmes aim to bring students to an advanced level of knowledge and competencies, typical for scientific or artistic functioning in general and for a specific domain in sciences or in the arts in particular. This level is required for the

students to practice sciences or arts independently, or to apply scientific or artistic knowledge in the independent practice of a profession or a group of professions. The application of European, federal and Flemish legislation regarding the professional practice is guaranteed.

The programme is completed with a master's thesis.

An advanced Master's programme follows another Master's programme. These programmes aim to further enhance the collected knowledge and competencies in a specific study area.

Master of Teaching for secondary education or art subjects
These Master's programmes combine a teacher training with a Master's programme in a specific domain. These Master's programmes consist of 90 or 120 credits. There are 60 credits of teacher training in the programme, 30 of which are dedicated to teaching practice. The Master of Teaching for secondary education is organized by universities and the Master of Teaching for art subjects by the Schools of Arts.

Doctor
The aim of the preparation of a doctoral thesis is to train a researcher who has the ability to make an independent contribution to the development and growth of scientific knowledge.
The doctoral thesis should demonstrate the ability to create new scientific knowledge in a certain field of study or across different fields of study through independent scientific research, including the arts.

The doctoral thesis should have the potential to lead to scientific publications.

Teacher
Academic Teacher Education
The Academic Teacher Education is a programme of 60 credits that can be followed up to and including academic year 2018-2019 in a university college, a university or a centre for adult education after having obtained a Bachelor's or a Master's degree or having a number of years of relevant experience in a certain area. Half of the credits are dedicated to practical training.
Up to and including academic year 2020-2021 this programme can be completed at a university college or a university.

Credit System

The number of credits expresses the weight of a programme or programme component.
Each credit represents at least 25 and at most 30 hours of study time, i.e. attending teaching activities (lectures, seminars, exercises, ...), preparing for, studying for and taking exams, writing papers or dissertations, or doing exercises or other assignments.

The Flemish study credits system is completely compatible with ECTS. One programme component comprises a minimum of 3 credits.

The study load of higher education programmes is as follows:

- Associate degree programme: 90 or 120;
- Bachelor's programme: at least 180;
- Advanced Bachelor's programme: at least 60;
- Master's programme: at least 60;
- Advanced Master's programme: at least 60;

No credits are assigned to the preparation of a doctoral thesis.

An average 60 credits are taken per academic year, which represents a workload of 1500 to maximum 1800 hours.

Access Requirements Higher Education

Associate degree programme

A Diploma of Secondary Education or a study certificate of the second year of the third cycle of secondary education that has been obtained at least 3 years ago, gives access to an Associate degree programme.

Bachelor's programme

A Diploma of Secondary Education gives direct access to a bachelor's programme.
For programmes in the fields of study of 'Audiovisual and Visual Art' and 'Music and Performance Arts' students have to pass an artistic entrance exam. The university colleges organise the entrance exam themselves.
For the university programmes in medicine and dentistry students have to pass an entrance exam. These two entrance exams are organized centrally by the Flemish government.
For certain Bachelor's programmes participation in a non-binding admission test is a requirement for enrolment.

In order to be admitted to an advanced Bachelor's programme, students should have already obtained a professional Bachelor's degree.

University colleges and universities have made provision in their education and examination regulation for extraordinary access requirements to their programmes taking into account humanitarian, medical, psychological or social reasons and students' merits and competencies.

An assessment of the knowledge of the teaching language may also be required.

Master's programme

A Bachelor's degree obtained after completing an academic Bachelor's programme gives direct access to at least one Master's programme.
A university can limit access to a Master's programme to the graduates of a specific academic Bachelor's programme. The university may grant access to holders of a different academic Bachelor's degree, after the successful completion of a preparatory programme.
The university may also grant access to holders of a Bachelor's degree obtained after the completion of a professional Bachelor's programme, after the successful completion of a bridging programme of a minimum of 45 and a maximum of 90 credits.

In order to be admitted to an advanced Master's programme, students should have already obtained a Master's degree.

Doctorate

The general access requirement for a doctorate is the holding of a Master's degree.

The university may require applicants to pass an aptitude test to assess whether they are suitable candidates to carry out scientific research in the field in question and whether they will be able to translate the results of this research into a thesis.

A student who has not obtained a Master's degree may be admitted to a doctoral programme after either an aptitude test or an exam.

Quality Assurance Systems

In Flanders, accreditation is a condition to grant the degrees of Bachelor and Master since 2004 and since September 2019 also to grant the Associate degree.
All accredited Associate degree, Bachelor's and Master's programmes are listed in the Flemish Higher Education Register: www.hogeronderwijsregister.be

The Nederlands-Vlaams Accreditatieorganisatie (NVAO) is the Accreditation Organisation of the Netherlands and Flanders.

The quality assurance system of Flanders focuses on the quality of individual programmes and the accountability for the quality. For universities and university colleges account is given through an institutional review which enables them to demonstrate how they guarantee the quality of their programmes. New programmes are assessed prior to their launch through the initial accreditation. The quality assurance system is in line with the The Standards and guidelines for quality assurance in the European Higher Education Area (ESG).
The quality assurance system of Flanders is described on
https://www.nvao.net/en/the-quality-assurance-system-of-flanders.

The NVAO is listed in the European Quality Assurance Register for Higher Education – EQAR -https://www.eqar.eu/

The Flemish Qualifications Framework, the Bolognaprocess and European Higher Education Area (EHEA) and EQF

Flanders completed its self-certification under the terms of the Bologna process on 2 February 2009 with the conclusion of several independent international experts showing that the Flemish national qualifications framework (NQF) is compatible with the overarching framework for qualifications of the European Higher Education Area (EHEA).
The completion of the self-certification is officially confirmed on the website https://www.nvao.net/en/bologna-process by the NVAO as well as on the website of the ENIC/NARIC Network:
https://www.enic-naric.net/belgium.aspx
or
http://www.enic-naric.net/framework-of-qualifications-in-the-europe-and-north-america-region.aspx

The Flemish Qualifications Framework is in line with the European Qualification Framework (EQF), which compares the qualifications from various European countries.
The referencing report (originally from 2011 but updated in January 2014) can be found on
http://www.vlaamsekwalificatiestructuur.be/en