



Master of Statistics

Report on RSS Accreditation

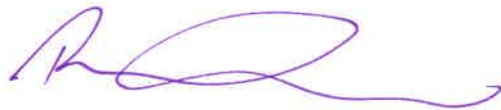
February 13, 2019

This document reflects the key elements of the RSS accreditation, as submitted in the RSS accreditation application document and as provided during the RSS site visit.

The RSS confirms the conclusions of the site visit (Section 4.2), as communicated at the end of the site visit, and the final reports sent on December 19, 2018 (Chapter 5).

Date: 14/2/2019

Signature/Seal of approval



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1. Introduction

The Master of Statistics is offered by the transnational University Limburg (tUL), which is a collaboration of Maastricht University and Hasselt University. The Master of Statistics is fully organised at the Campus Diepenbeek of Hasselt University.

Since 2006, there has been a protocol of collaboration between KULeuven and UHasselt, in particular between the Leuven Statistics Research Centre (LStat) at KULeuven and the Center for Statistics (CenStat) at UHasselt. This agreement is geared towards a close collaboration between both universities in terms of educational initiatives in statistics. The Master of Statistics at UHasselt and at KULeuven are also the only two-year master of statistics programmes in Flanders.

The Master of Statistics at UHasselt and at KULeuven both received an accreditation by the NVAO in 2009, after an assessment and evaluation jointly with the Master in de Actuariële Wetenschappen (Free University of Brussels) and the Master of Financial and Actuarial Engineering (KULeuven). Whereas the accreditation of the KULeuven Master of Statistics has been extended until 30 September 2025 (implied by the institutional review of the KULeuven in 2017), this is not the case for the UHasselt Master of Statistics, as a programme offered by the tUL. Its accreditation will end on 3 July 2019.

Since 2010 the UHasselt and the KULeuven Master of Statistics acquired accreditation from the prestigious Royal Statistical Society (RSS), being among the first and now still few master programmes on the European mainland to have received this accreditation. The prestigious Royal Statistical Society is one of the world's leading learned societies to promote the importance of statistics and data, and have done so since they were founded in 1834. For both master of statistics programmes, the RSS accreditation was assigned until 2017-2018 and to obtain further accreditation, both master programmes applied for a new accreditation according to the new RSS accreditation procedure.

For the UHasselt Master of Statistics, the RSS accreditation application and its positive outcome have earlier been agreed by the NVAO as principal constituents for an extension of the current NVAO accreditation.

This document bundles all relevant information about the Master of Statistics, the UHasselt Quality Assurance System and the RSS Accreditation application, the assessment, the site visit and the final decision.

Chapter 2 summarizes very briefly the key characteristics of the UHasselt Quality Assurance Framework, called VISIO-O: Vision-Innovation-Strategy-Intervention for educational development. The Strategic Plan and its current status (Section 2 of Chapter 2) are the principal documents of the UHasselt Master of Statistics at this stage of the 6-year VISIO-O cycle. This information on the UHasselt Quality Assurance Framework and the Strategic Plan of the Master of Statistics was part of the RSS accreditation report as submitted on March 22, 2018 (similar to a "zelfevaluatierapport"). The current status of the Strategic Plan (Section 3) was communicated to and available with details for the members of the RSS committee during their site visit on November 28, 2018.

Chapter 3 provides background information about the RSS Accreditation Scheme and the Accreditation Process.

Details about the site visit and the conclusion are presented in Chapter 4.

Chapter 5 concludes with the final RSS reports and the confirmation of the RSS Accreditation.

An appendix provides additional detailed information on available materials during the site visit of RSS.

Key documents related to the RSS accreditation can be downloaded from this Google Drive:
<https://drive.google.com/drive/folders/1ISAPCuyJQ6Y3dZAjFNjBtz4f25Juwbpn?usp=sharing>

2. UHasselt Quality Assurance

In the first section of this chapter we provide more information on the internal quality assurance framework for the educational programmes of Hasselt University. One of the key elements in this framework, the strategic plan of an educational programme, is discussed in the second section.

2.1. Internal Quality Assurance

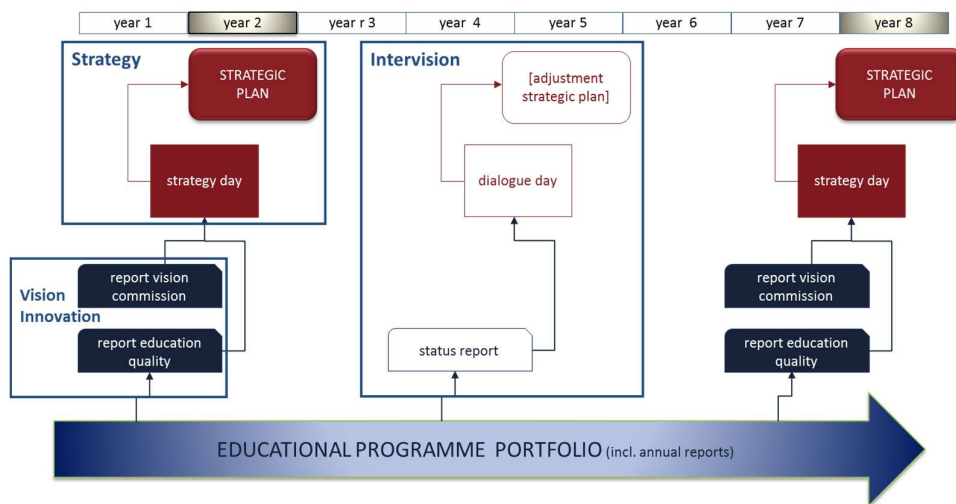
The Master of Statistics is organized under the responsibility of the **Faculty of Science**. The **EMT (Educational Management Team)** consists of the chairs of the trajectories, together with teacher and student representatives and educational experts. The EMT is responsible for the daily operation of the programme. It reports to the **Faculty Council**. The **ombudspersons** and the **educational experts** play a crucial role in the quality control process. They operate at three levels. First, they receive structured feedback via surveying the students. Second, feedback is received in an informal way, through feedback meetings and further informal contacts. Third, the ombudspersons can give feedback on the programme, based on the comments received. All of these are instruments to prepare feedback, formally and informally, to the teaching staff, the leadership of the programme, and the faculty and academic authorities.

At a central university level, the **Education Board** (Onderwijsraad) advises the university management on educational matters. The Education Board consists of EMT chairmen and is chaired by the vice-rector of Education. This Board monitors quality and good practice, stimulates innovation regarding educational affairs and initiatives. It especially focuses on long-term strategic issues, and topics that require careful thinking and planning.

Evaluation procedures have been implemented at University level, assessing the opinion of all relevant stakeholders (students, teachers, alumni and professional field). Every course is evaluated at least once every two years. New faculty, new visitors, and one-time visitors will have their course evaluated without exception. The survey takes the form of a number of statements about all facets of the course. The response is by way of a six-point ordinal scale (from strongly agree to strongly disagree, with the option 'not applicable'). The analysis of the survey data rests in the hands of the EMT supported by the Educational Experts. The results are entered into the coordinating lecturer's academic record. It can also be used by Programme Chairs and the Chair of the EMT, for evaluation and programme-improvement purposes.

The conduct of quality assurance of UHasselt is named **VISIO-O: Vision-Innovation-Strategy-Intervention for educational development**. The figure below shows the different steps in the VISIO-O process that encloses a 6-year cycle.

Figure 1. The VISIO-O steps enclosed in a 6-year cycle



An important tool to ensure the continuous quality is the **educational programme portfolio** where every programme can demonstrate the vision, the profile of the educational programme, the educational strategy, the educational policy and the query of educational quality of all relevant stakeholders. The first phase in the conduct of quality assurance is divided in 2 different aspects. The evaluation of the programme specific content on the one hand and all educational aspects on the other.

First, the **vision commission** will have a dialogue with the EMT and other relevant stakeholders on all relevant aspects regarding academic level, whether the programme is up-to-date and gives enough attention to social developments. The vision commission consists of external profiles like experts on the specific content of the programme, peers, alumni and professional field. They make suggestions and recommendations and focus on the strengths and opportunities.

The second aspect is an **evaluation of the educational aspects** that are evaluated by the educational office. The input for this analysis is the educational programme portfolio. This report will provide a SWOT analysis with a focus on the strengths and opportunities of the educational programme.

Based on these two documents, the EMT will develop a **strategic plan** with strategic and operational objectives. Within 3 years the educational office will provide a **status report** to the EMT as input for the **dialogue** with the vice-rector and the dean. Based on this dialogue the EMT can adjust their strategic plan. This process is repeated every 6 years to assure a consistent quality of the programmes.

2.2. Strategic Plan of the Master of Statistics (2016-2022)

This section provides an (historic) overview of the key elements of the Master of Statistics.

Section 2.2.1 originates (in full) from the Strategic Plan of the Master of Statistics (2016-2022) ¹, a crucial part of the internal quality assurance system of UHasselt. As this plan was drafted in 2016, references to dates and plans may currently look a bit outdated.

Section 2.2.2 contains information on two SWOT analyses of the master programme: a first one in the context of latest VLIR visitation and a second one as part of the current strategic plan.

2.2.1. Background, Mission & Vision

The Center of Statistics (CenStat), one of the main institutes of Hasselt University and the UHasselt division of I-BioStat (Interuniversity Institute for Biostatistics and statistical Bioinformatics), encompasses research, education and consultancy in **mathematical statistics, biostatistics, statistical bioinformatics, epidemiology and public health methodology**. CenStat provides statistical consulting for local, regional and federal government authorities, for the pharmaceutical industry and other industrial partners, for research teams from medicine, biology, chemistry, economics. Research and consultancy at CenStat are constantly interacting with education. This educational link between CenStat and the industry, research institutes, and the government extends over a wide variety of consultancy and collaborative research relationships.

The main themes of research and consultancy are exactly corresponding to the **three specializations of the Master of Statistics**:

- Biostatistics
- Bioinformatics
- Epidemiology & Public Health Methodology.

Although mathematical statistics is not a specialization of the Master of Statistics, nor a main topic of consultancy projects, the existing research expertise in mathematical statistics guarantees a solid foundation of the theoretical justification of applied methodology as presented in the Master of Statistics and applied in consultancy projects.

All three specialisations will become available in two other versions: **ICP and DL**. The distance learning (DL) version offers exactly the same study programme and envisages the same student learning outcomes as the on-campus version. The International Course Programme (ICP) is open to students with a VLIR-UOS scholarship (mainly from Africa, Asia and Latin America). Up until now the ICP version was limited to the Biostatistics specialization, but its recently approved new version will be extended with the Epidemiology & Public Health Methodology and the Bioinformatics specialization.

The next section sketches briefly the history of the Master of Statistics since its foundation in 1988.

2.2.1.1. Brief historical background

The Master of Science in Biostatistics was **founded in 1988** and was originally conceived as a **1-year master** program. The best way to describe the status of the program at that time is ad hoc. The program was founded by Professors Herman Callaert and Noël Veraverbeke, Paul Janssen, and Paul Embrechts, receiving support from authorities in the field, Professor Sir David R. Cox, and Professor Stephen W. Lagakos (+2009). The program was taught by local faculty, supplemented with **visiting faculty** from other Flemish, Belgian, and foreign universities. This is still the case today, in spite of a growing professorial and postdoctoral corps within CenStat. Given that biostatistics as a discipline has been predominantly well-organized in Anglo-Saxon countries and given the collaboration with economically developing countries (VLIR-UOS), this is an entirely natural step.

The international flavour was further strengthened when UHasselt obtained recognition from the former ABOS, currently VLIR-UOS, to organize a so-called **International Course Programme (ICP)**. This program was **founded in 1993**, and coincided, to a large extent, with the Master of Science in

¹ The strategic plan is downloadable from the shared Google Drive:

<https://drive.google.com/drive/folders/1ISAPCuyJQ6Y3dZAjFNjBtz4f25Juwbpmp?usp=sharing>.

Biostatistics, except that a mandatory preparatory module was added for the VLIR-ICP students, organized during the summer preceding their enrolment in the Master of Science in Biostatistics. The VLIR-ICP program was heavy since it started with a summer term, then three terms of regular teaching, and concluded with a summer internship.

To organize the student's workload in a more balanced way, **in 1999 the Master of Science in Applied Statistics** was founded. This turned the VLIR-ICP students' program from five contiguous terms into a two-year program consisting of 3 terms in the first year (Master of Science in Applied Statistics) and 4 terms in the second year (Master of Science in Biostatistics). It made the workload more manageable, allowed for a better synthesis and integration of the courses, as well as for a more efficacious didactic concept. Further, it allowed for a diversified pallet of elective courses. At the same time, the Master of Science in Applied Statistics became a standalone program, next to its role as a preparation for the Master of Science in Biostatistics. From that moment onwards, the two programs catered three student populations:

Students taking the Master of Science in Biostatistics only: those with a solid mathematical, quantitative training, and/or with sufficient working experience and maturity, willing to specialize in the field of biostatistics.

Students taking the Master of Science in Applied Statistics followed by the Master of Science in Biostatistics: those studies with the same goal of specializing in biostatistics, but in need of a sound preparation prior to starting the Master of Science in Biostatistics. All VLIR-ICP students belong to this category, by default.

Students taking the Master of Science in Applied Statistics only: those seeking a broad training in statistics, with emphasis placed on one or a few lines of application, such as biostatistics and biometry, epidemiology, social and official statistics, etc.

In 2001-2002, the **transnationale Universiteit Limburg (tUL)** was founded as a joint initiative of the *Universiteit Maastricht (UM)* and UHasselt. Under the tUL umbrella, full academic programs were developed for biomedical sciences (molecular life sciences) and computer sciences. The Master of Science in Applied Statistics and Master of Science in Biostatistics were made part of the tUL initiative as well, within the **School for Information Technology (SIT)**, and **from 2007-2008 onwards**, they were complemented with a **Master of Science in Bioinformatics**. The Master of Science in Bioinformatics evolved out of one of the masters of the tUL bachelor-master in Biomedical Sciences (*Biomedische Wetenschappen, BMW*)/ Molecular Life Sciences (*Moleculaire Levenswetenschappen, MLW*). Due to the strong connection between the Master of Science in Bioinformatics on the one hand and the Master of Science in Biostatistics and the Master of Science in Applied Statistics on the other hand, it was deemed natural to place all three, combined with the VLIR-ICP Biostatistics, within the SIT under a single umbrella.

As of the academic year 2007-2008, these programs were unified into the **2-year Master of Statistics, with four specialisations:**

- Biostatistics
- ICP Biostatistics
- Bioinformatics
- Applied Statistics.

This is a result of the programs' transformation from *ad hoc* Master of Science programs, to regular master programs, which form an integral part of the standard bachelor-master structure, following the **Bologna Treaty** principles and implemented according to Flemish legislation.

Since 2006, there has been an agreement, a protocol of **collaboration**, between **KU Leuven and UHasselt**, in particular between the Leuven Statistics Research Centre (LStat) at KU Leuven and CenStat at UHasselt. This agreement is geared towards a close collaboration between both universities in terms of educational initiatives in statistics. For the current master programs, this implies that the universities in general and the bodies responsible for the master programs in particular strive towards:

- Exchanging faculty for selected courses to efficiently use capacity and to enhance the scientific quality of all programs;
- Exchanging students for elective courses so that students have access to a wider and more attractive range of optional courses;

- Defining the domains in which they offer statistical education to complement rather than compete;
- Adopting a maximum amount of common policies regarding the programs' administration and organization.

The **VLIR committee visited** the Master of Statistics in **October 24-25, 2007**, and released its final **report in July 2008**. The assessment committee concluded that "the Master of Statistics, including its four specializations, has enough guarantees for generic quality since the different criteria of the six subjects from the accreditation framework are satisfied. The final conclusion of the committee is therefore **positive**" (six subjects being 1. Aims and objectives; 2. Curriculum; 3. Staff; 4. Services; 5. Internal Quality Assurance; 6. Results). In the results section, the committee concluded that "the programme reaches its objectives in an excellent way and stands as a **unanimously recognised reference for an international Statistics programme** that is focused on training students originating from all over the world."

As recommended by the VLIR visitation in their final report, the applied statistics specialization was reshaped into a specialization **Epidemiology and Public Health Methodology in 2009**, including the introduction of new course units with topics in infectious disease epidemiology and microbial risk assessment.

Based on the positive assessment report in **2009**, the Master of Statistics received its positive **NVAO-accreditation** (NVAO: the Accreditation Organisation in the Netherlands and Flanders), as proof of generic quality.

Since 2010 the programme acquired **accreditation from the prestigious Royal Statistical Society (RSS)** (www.rss.org.uk) based on the programme's general depth, breadth, quality, foundation and statistical content. Graduates from accredited courses are granted the Society's professional status of Graduate Statistician on application and are therefore able to further undertake suitable professional training and experience so as to be eligible to apply for Chartered Statistician status. Moreover, each year an accredited university is invited to submit the best postgraduate from any of their accredited courses to be nominated as RSS prize-winner.

Currently the two-year master of statistics is converted into a second master of statistics, a **distance learning (DL) version**, fully equivalent in all specialisations (except ICP Biostatistics), and running in parallel with the on-campus (OC) version. The implementation of this major initiative of educational innovation started in 2014-2015. In the academic year 2015-2016, the first year (largely in common to all specializations) was fully offered as DL programme. The objective is to have the full two-year version (largely different for all specializations) implemented by the academic year 2017-2018.

Finally, from **academic year 2016-2017** onwards, recently approved **major curricular changes** will be implemented stepwise, starting with year 1. From 2017-2018 onwards the majority of students is expected to graduate in June, as the individual thesis work will be scheduled in semester 2 of year 2 (rather than in the summer period following the end of the course work). This is a major curricular change as from the foundation of the master in 1988, the individual thesis work was scheduled in the summer period. Shifting this final part of the study programme forward to the second semester of the second year posed a major challenge: keeping the first semester rather introductory in order to equalize the knowledge and skills of the heterogeneous inflow of new students, and, on the other hand, keeping the contents of the study programme (with 4 semesters fully filled with courses) in all its dimensions intact. For that purpose, quite invasive curricular changes were inevitable, but the whole exercise created a unique opportunity to revise, optimize and update all courses jointly. More details on the DL programme and the new curriculum are available in the portfolio.

2.2.1.2. Mission

The World of Statistics is a global network of about 2,360 organizations worldwide, representing businesses, research institutes and universities, professional societies and governmental agencies. In line with the conclusion of the International Year of Statistics campaign, it advocates the **global need** for statistics as the driving force for scientific discovery and innovation. Well-trained statisticians have the power to advance society in many fields by ensuring correct and cost-effective data collection, analysis and interpretation in support of agricultural, economic, medical, political and public health decision making processes. Not surprisingly, the World of Statistics expects the demand for statisticians and data-analysts to increase by up to 4.4 million jobs worldwide in the coming years.

The need for well-trained applied statisticians, biostatisticians and bioinformaticians is ever increasing in light of the crucial impact of these fields on health (e.g. infectious disease modelling (outbreaks)) and

the environment. The Master of Statistics, with specializations in biostatistics, bioinformatics, epidemiology and public health methodology, keeps abreast with these evolutions. The study programme combines a solid study of principles and frontier methodology of applied statistics and biostatistics with up-to-date training in topics such as clinical trials, public health, longitudinal data analysis, survival analysis, modelling infectious diseases, survey methodology, genetic epidemiology, analysis of gene- and protein-expression data. Many teachers of the programme are internationally renowned experts in their field with proven track-record in terms of peer-reviewed publications, collaborative research grants and consulting for industrial and governmental. CenStat's cutting-edge research and industry-driven statistical innovation positively impacts the programme, as recognized by the latest visitation committee.

In many fields (livestock research, infection dynamics, clinical studies, monitoring water pollution...) **data collection** is of crucial importance. In each of these fields, sound scientific conclusions require a professional statistical analysis of appropriate data. Therefore, experimental design and data collection are crucial ingredients in many scientific proposals. Hence, statisticians should play a role from the start supporting the principal investigator with the selection of relevant biological or medical parameters, the planning of the experiments or the clinical/epidemiological study. High quality data makes statistical analysis trustworthy.

Data collection is only the first part of the story. To arrive at sound conclusions, in-depth knowledge of **statistical methodology** is a must. This in-depth knowledge is what we offer in the proposed programme.

Focus is not only on statistical methodology but also on up-to-date knowledge of **statistical software** (including freeware software). Software should not be used as a black box, good statisticians know the interplay between statistical software and statistical methodology and, therefore, also know what the limitations are of the software used. Hence they learn to look at output in a critical way.

A nice feature of statistics is that it is used in a large variety of scientific domains. Therefore, good statisticians need to be good communicators, since they often work in interdisciplinary teams. Hence, the programme also places focus on presentation techniques, scientific report writing, teamwork and ethical issues.

The UHasselt Master of Statistics, with trajectories biostatistics, bioinformatics, and epidemiology and public health methodology, thus addresses a global and local developmental need for well-trained statisticians through its unique focus on high-level statistical methodology and practice, directed towards health sciences.

In terms of research, consulting, and teaching, these themes belong to the core competences of UHasselt, which is also being recognized through various prestigious international grants, awarded to faculty members of the Center for Statistics (e.g., an ERC consolidator grant for Niel Hens, various FWO [Fund Scientific Research, Flanders] grants, similar grants from IWT, FP7, NIH H2020 projects, etc.). Apart from successful books being published on applied statistical themes, which UHasselt's faculty use during their lectures in the Master of Statistics, the internationally competitive research position of CenStat assures the content quality of the master programme. The research-education nexus is an important factor in the success of the Master of Statistics programme at UHasselt.

2.2.1.3. Vision

The above views on the global need for statisticians, the "statistics" profession and the core research themes of the Center for Statistics, CenStat, and by extension the Interuniversity Institute for Biostatistics and statistical Bioinformatics, I-BioStat, are the background against which the vision CenStat and the UHasselt have developed for its current and future master program and its trajectories, has to be understood. Biostatistics focuses on medical and non-medical applications, public health and epidemiology on methodology in infectious disease methodology and health sciences in general, and bioinformatics places focus on genetics and related fields, whilst maintaining a strong and unique link with the field of (bio)statistics, thereby creating a unique and very much demanded profile.

Having described our vision in an integrated fashion, we believe it is clear that a common philosophy underlies all three trajectories, resulting in the following global vision:

The Master of Statistics stands as a unanimously recognized reference for an international Statistics programme training students from all over the world, in biostatistics, bioinformatics and in methodology for epidemiology and public health.

This statement was actually one of the main conclusions about our Master of Statistics of the VLIR visiting committee, as formulated in its final report in July 2008. At that time the two Master of Science programmes in Biostatistics and Applied Statistics had been just integrated in a two-year initial Master of Statistics with, next to Biostatistics, the new specialisation Bioinformatics and the specialisation Applied Statistics, which was converted into the new specialisation Epidemiology and Public Health Methodology shortly after. Since then both new specialisations have developed into mature specialisations with their own target student population. It is our challenge to keep abreast of the rapidly changing scientific field of statistics with newly emerging fields such as "big data", "data science", etc. and to stay an internationally recognized reference in all three specialisations: biostatistics, bioinformatics, and epidemiology and public health methodology.

2.2.1.4. Uniqueness of the UHasselt Master of Statistics compared to other programmes

Although there are related programmes in statistics in Belgium and beyond, which in some cases are complementary to UHasselt's Master of Statistics through its institutional cooperation, fundamental differences in the content of the programmes do exist. Moreover, the international focus on and the interaction with developing countries, especially through the current ICP, are unique selling points of the UHasselt Master of Statistics programme.

The **KU Leuven (Belgium)** organizes a two-year Master of Statistics with majors in biometry, business statistics, industrial statistics, theoretical statistics and statistics in the social, behavioural and educational sciences. The UHasselt and KU Leuven signed a memorandum of collaboration, over a decade ago. Students of Leuven can follow optional courses in Hasselt, and vice versa. Some courses are taught by the same professor in both programmes, often in a blended learning fashion. This is an additional attraction, considerably broadening the programme at nearly no cost. The most distinctive feature agreed upon by both parties is however, that the **focus on health sciences lies in UHasselt**. This collaboration with the KU Leuven is of course complemented and strengthened by the structural collaboration on research and consultancy within I-BioStat.

The **University of Ghent (Belgium)** organizes a one-year advanced Master of Statistics and Data Analysis. Because of its MANAMA (master-after-master) organizational structure and its restriction to one year only, there are some major differences, such as i) different target student group; ii) higher tuition fee (€2930 = fixed amount €230 + number of credits × €45).

The **University of Antwerp (Belgium)** organizes a two-year Master of Epidemiology. Undoubtedly, the theme and topics of such a programme are important, but they are relatively broadly available worldwide. Our Master of Statistics' unique trait, apart from its main focus on health sciences, is also its strong emphasis on solid statistical methodologies. Our graduates develop a profound familiarity, not only with existing techniques, but also with strategies of lifelong learning in a rapidly evolving area, allowing a successful career to await them (e.g., due to the genomics, metabolomics, microbiomics, ... revolution; due to the mainstreaming of big-data and data science and the need for associated methodology, etc.). CenStat contributes to the UAntwerp master of epidemiology programme through four courses: data management and software, introduction to statistics, biostatistics and mathematical epidemiology. This collaboration is of benefit to both master programmes because of the complementarity.

The two **Master Global health** programmes, one organised by Maastricht University, the other incepted by the five Flemish universities, differ from UHasselt's Master of Statistics programme because of their broader interdisciplinary approach (law, economy, medicine & life sciences, ...) to global health. For both programmes, students can take courses from our master of statistics programme as elective courses within their study trajectory.

Programmes in the **French speaking part of Belgium** are largely focused on mathematical statistics. There is some emphasis on applied areas (such as financial methods, econometrics, etc.), but the focus on biostatistics is minimal.

There are several programmes in medical and agricultural statistics in the **United Kingdom** (e.g., the London School of Hygiene and Tropical Medicine, University of Reading, etc.). The difference with ours is that we encompass both human and non-human biostatistics (medicine, epidemiology, clinical studies, agriculture,...), whereas the British programmes tend to focus only on one of these.

Various programmes in bioinformatics in Europe exist (including at KU Leuven, in Germany, and elsewhere) but, to the best of our knowledge, these do not provide a major emphasis on the statistical paradigm, the specific needs for statistical methodology, and the similarities and differences of such methodologies relative to other statistical areas.

There are **few programmes available in the South**, yet with a more theoretical focus and often lacking practical and professional skill learning through collaboration with stakeholders in the field of life science. We have been contributing to the inception and further development of specific programmes in Ethiopia (e.g. Masters in Biostatistics (Jimma) and Cuba (Masters of Biostatistics in University of Havana). We believe that strong North-South partnerships are crucial for both partners. Our graduates have been forming methodological cores in their respective countries and our own faculty and staff have been contributing towards capacity building in the South. Using such scientific and teaching communication lines allows rejuvenating the existing programmes while exploring a more applied focus highly relevant for the South.

To conclude, a recent quote from **Sir David Cox**, one of the best and internationally most renowned statisticians in the world, summarizes the unique position of the UHasselt Master of Statistics programme: ***“Statistical education has developed strongly in Europe over recent decades but I know of nowhere else where there is the particular combination of strengths and relevance that you provide.”***

2.2.1.5. The International Course Programme VLIR-ICP

As mentioned in Section 2.2.1, the International Course Programme (ICP) was **founded in 1993**, and coincides, to a large extent, with the Master of Science in Biostatistics, except for some mandatory ICP course units, taught by professors from the South. In 2000 the ICP programme was evaluated (see VLIR 2000 evaluation report in portfolio), followed in 2002 by a VLIR-ICP remedial evaluation (see portfolio). After the **2001 VLIR-UOS** call for proposals, the ICP Biostatistics programme at UHasselt was again selected as ICP, together with 14 other master programmes. A new call was originally envisaged in 2005. For various reasons, however, this call was never launched. In 2010 the Flemish rectors' conference VLIR adopted the basic principles of the new ICP policy. It took until 2014 for these principles to find the right momentum for being updated and refined. In 2014, the Bureau UOS commissioned a study for tailoring the selection criteria of the overall Selection System, to the needs of master programmes organized by and at the Flemish universities. In 2015, the Bureau UOS used the conclusions of this study as a basis for final policy review with the aim of producing a **new ICP 2017** call.

Mid-March 2016, the ICOS (Institutioneel Coördinator Ontwikkelingssamenwerking) of UHasselt **submitted the application** for a new ICP Master of Statistics, prepared by the new coordinator Niel Hens (in succession of Paul Janssen) together with Sarah Vercruysse (research manager) and all UHasselt professors involved in the current Master of Statistics. The new application covers several changes and improvements, minor and major ones; one being the extension of the ICP curriculum to no longer be limited to the Biostatistics specialization, but also the Epidemiology and Public Health Methodology specialization, and as a future track, the Bioinformatics specialization. More details are available in the portfolio. In **July 2016**, the **new ICP** Master of Statistics has been **approved** by VLIR-UOS.

2.2.1.6. International recognition of UHasselt's Master of Statistics

For more than a quarter of a century the Master of Statistics was the gateway for about 1000 graduates including about 300 ICP scholars, to start a career in academia, in governmental agencies, and in industry. In his letter of support for the renewed ICP application, **Sir David Cox**, arguably one of the world's leading living statisticians refers to UHasselt's Master of Statistics as having *“the very special strength of combining a high academic quality with a deep concern with applications of statistics to such wide-ranging fields as agriculture, health, social issues and many others.”*

International recognition of the programme is further demonstrably present at many layers:

- A highly **international student population** that gains further international experience through Erasmus & Socrates mobility programmes, thesis projects with foreign supervisors.
- The programme offers a **mixture of local and international teachers**, all specialists in the field with certified mastering of the English language. Indeed, courses are taught by members of CenStat, and I-BioStat, but also by **visiting faculty** from Belgium, Europe and other parts of the world (including Harvard University and other top ranking institutions) who are invited on the basis of their state-of-the-art knowledge and on excellent teaching skills. Similarly, CenStat members are frequently invited to figure as guest lecturer in courses of other universities and in short university courses. Governmental agencies and industry frequently call upon CenStat for statistical training.
- Since 2010 the programme acquired accreditation from the **prestigious Royal Statistical Society (RSS)** (www.rss.org.uk) based on the programme's general depth, breadth, quality, foundation and statistical content. Graduates from accredited courses are granted the Society's professional status of Graduate Statistician on application and are therefore able to further undertake suitable professional training and experience so as to be eligible to apply for Chartered Statistician status. Moreover, each year an accredited university is invited to submit the best postgraduate from any of their accredited courses to be nominated as **RSS prize winner**.
- The Adolphe Quetelet Society was founded in December 1952 as the Belgian Region of the International Biometric Society (IBS) (www.biometricsociety.org). The IBS is an international society devoted to the mathematical and statistical aspects of biology. As an Institutional Member of the Adolphe Quetelet Society, UHasselt's Master of Statistics offers a **Quetelet prize** to one or two of their students every year for their excellent Master thesis.

The Master of Statistics is truly international. The student population varies from year to year, but generally provides a good mix of Belgian, European and non-European students.

2.2.1.7. Compliance with the university's Mission, Strategic plan and internationalization policy

The policy on internationalisation of UHasselt is based on recommendations of the Vlaamse Onderwijsraad (VLOR, Adviesnota "Uitdagingen voor het Vlaamse Hoger Onderwijs in de 21ste eeuw"). The VLOR advocates partnerships based on the principle of equality and respect for the local culture: "brain circulation" rather than "brain drain" or "brain gain". Capacity building in the framework of development cooperation is one of the three main themes highlighted in the **Mission and Strategic Plan of Internationalisation of UHasselt** ("Beleidsplan internationalisering 2014-2017"²). "**Science sharing**" and "**brain circulation**" are the central principles applied in the formulation of strategic and operational objectives.

As described in the **Mission and Strategic Plan of Education** ("Onderwijsbeleidsplan 2013-2017"³), UHasselt offers scientifically, societally, and economically relevant study programmes with regional as well as international dimensions. It guarantees excellent **innovative education** based on the interplay between research, education and scientific consultancy. Next to **scientific competences**, UHasselt has identified five generic core UHasselt **skills**, to be developed and acquired in a **sustainable way**: i) self-directed learning and acting (including self-reflection), ii) multidisciplinary collaboration, iii) communication and presentation, iv) stakeholder awareness, and v) ethical thinking and acting. The sustainability is central and based on the following objective of the Decade for Education for Sustainable Development (2005-2017) (launched at the beginning of this century by The United Nations Educational, Scientific and Cultural Organization, UNESCO): "to integrate the principles, values and practices of sustainable development into all aspects of education and learning. This educational effort will encourage changes in behaviour that will create a more sustainable future in terms of environmental integrity, economic viability and a just society for present and future generations." Another core value of the plan is the so-called "**inclusive teaching**": not only the end competences are at the heart of the development of curricula, but also the **student's initial situation**, in order to achieve the full development of all students, irrespective of their background and socio-economic status. UHasselt recognizes and stresses the importance of **international networks** to achieve these ambitions; such networks support students and teachers during and after the study programme to critically reflect their own frameworks. Sustainability, lifelong learning, networking & internationalisation (based on brain-sharing international collaboration and partnerships, being the link to the plan of internationalisation) are key strategic objectives of UHasselt's educational policy.

² The actual plan of the time of drawing up the Strategic Plan 2016-2022

³ The actual plan of the time of drawing up the Strategic Plan 2016-2022

The Master of Statistics and its ICP version fully comply with both missions and strategic plans of internationalisation and education. Staff and students are diverse, both from a cultural as well as from a gender background. The programme is followed by students from a variety of educational and cultural backgrounds. Working in a multidisciplinary, intercultural, and international team is an explicit learning outcome (see portfolio, agreed by all university representatives in the preparatory phase of the VLIR 2015 visitation). Especially in project-oriented course units, this diversity mimics the student's later working environment. The programme is the most international study programme at UHasselt and takes a leading role in initiatives of internationalisation and innovative education, as proven by the in 2015 awarded grant applications for the Master of Statistics:

- Funds Innovative Education 2014: "Blended Learning" (€ 35,000 with additional € 40,800 co-funding).
- Funds Encouraging Internationalisation 2015: "Development of a strategic network of partner universities for institutional collaboration with the South" (€10,000)
- Funds Innovative Education 2015: "Development of a system of feedback, assessment and evaluation for the Master of Statistics, blended/distance learning" (€ 57,250 with additional € 48970 co-funding).

2.2.1.8. Course providers' main field of expertise

All course providers combine teaching assignments with research projects and/or consultancy projects. The most recent visitation report stated '*Excellent quality of staff for every specialization, covering the necessary fields in statistics and with a very high level of research being carried out.*' We kindly refer to the section on "Research" on the Censtat website (<https://www.uhasselt.be/censtat>) for an overview of CenStat's recent research output and research projects.

2.2.1.9. The Student & Alumni Organization JOSS

An alumni organization has been active since a few years after the inception of the program. It started in June 1991 as ABD, Alumni Biostatistics Diepenbeek, and became A²BD, Alumni Applied and Biostatistics Diepenbeek when the MScApstat started. From September 2007 onwards, it becomes A²B²D, **Alumni Applied Statistics, Biostatistics, and Bioinformatics Diepenbeek**. In 2009 the name was changed to JOSS (Joint Organisation of Statistics Scholars).

The organization targets not only alumni, but also current students. Special attention is devoted to students from foreign countries. In this sense, the Board members facilitate living in a completely different environment, what Belgium for sure is for a lot of our foreign students. They maintain contact with the alumni as well as with the current students and with the teaching staff.

Members are kept at current through regular issues of the **JOSS Newsletter**, with announcements about social activities, statistical meetings and also with personal matters. Every academic year starts with an introduction day for the VLIR/ICP and other foreign students. During this day, the Board helps understanding cultural differences and organizes a tour through Diepenbeek, the town where most students from abroad stay. Many other activities are organized with the main goal to create a relaxed and pleasant atmosphere in which it is possible to meet friends and to exchange personal experiences.

The Board, elected by the members, is traditionally staffed by junior CenStat members, at the predoctoral and postdoctoral level. This organizational form facilitates easy interactions between staff, current students, and alumni. In recent years, social media (Facebook, WhatsApp, LinkedIn, etc.) have transformed the organization of JOSS and the role JOSS can or should play as student & alumni organization. Dealing with this is certainly one of the major challenges of the JOSS-Board in the coming years.

2.2.2. Analyses

First, we summarize strengths, weaknesses and opportunities based on the latest VLIR visitation, and related action points taken since then. Next, a new SWOT analysis will serve as the basis for setting up our future strategy with well-chosen operational objectives.

2.2.2.1. Strengths, weaknesses and actions based on the 2007 VLIR visitation

In what follows, we first describe the strengths and weaknesses of the Master of Statistics programme, based on the 2007 VLIR visitation. At that time, the master of statistics, formerly called "master of science of statistics", i.e. an advanced master programme, had just been reorganized into a two-year initial master of statistics programme with four specializations: applied statistics, biostatistics, biostatistics-ICP and bioinformatics. Given the expansion of public health research, the applied statistics trajectory was replaced by a trajectory on epidemiology and public health methodology in 2009. The programme combines a solid study of principles of statistics with up-to-date information on topics such as clinical trials, public health, survival analysis, genetics, survey methodology..., while the Bioinformatics specialization keeps pace with the recent developments in molecular biology and genetics. The biostatistics-ICP tract has been highly successful and popular since the start in 1993.

1) Strengths: The committee states that the programme reaches its objectives in an excellent way and stands as a unanimously recognized reference for an international Statistics programme that is focused on training students originating from all over the world (page 70 of final report). The committee assesses the curriculum as being positive for every specialization.

The committee assesses/appreciates:

- Excellent level and orientation and discipline-specific requirements (aims and objectives).
- Offered with extra attention for the needs of developing countries.
- Good balance between introductory, advanced and specialized courses.
- Excellent tutoring for the ICP-Biostatistics specialization.
- Scientific and practical objectives are well defined and definitely relevant
- Emphasis on developing the capacity to conduct and apply scientific research. The focus on both the development of research and of professional skills.
- The overall curriculum as well adapted to the context in which the participants have to work after graduating.
- That the students are properly tested, assessed and informed about the results.
- Excellent quality of staff for every specialization, as well as excellent requirements for professional/academic orientation for every specialization.
- Internal Quality Assurance as satisfactory for evaluations of results for every specialization and as good for measures for improvement for every specialization.
- Excellent achieved learning outcomes and good study progress for every specialization.

2) Weaknesses & opportunities: The committee listed the following weaknesses as opportunities for further improvement:

- The committee suggests further defining the profile of the Applied Statistics specialisation with suggestions towards: first, a stronger focus on designs, causality, data gathering techniques, etc. and how to communicate the results; secondly, learning the statistical analysis methods, techniques and models, since a fundamental understanding (as always) is required.

Action taken: The applied statistics trajectory was replaced with the epidemiology and public health methodology trajectory in 2009.

- To substantiate the collaboration with Maastricht University and the Master of Statistics at KU Leuven (complement rather than compete).

Action taken: Colleagues at Maastricht University, Master in Global Health, have formulated a specific request for us to offer a statistics trajectory to their master motivated by the need for statistics as transversal discipline in global health. There is a strong, complementary collaboration with KU Leuven on research and education through I-BioStat. The collaboration between both master of statistics will be consolidated and opportunities for intensification will

be explored.

- The committee believes that the interaction of Bioinformatics with the other specializations can create a clear added-value. To improve the curriculum by introducing a course on professional aspects and societal issues related to data.

Action taken: In the new curriculum (1) a course devoted to computational biology as well as (2) a specific course devoted to health studies and data will be given.

- To carefully monitor students' workload and implement a more formalised follow-up procedure.

Action taken: A time schedule visualising all lectures and deadlines for assignments across all running courses, including also all activities such as quizzes and interaction sessions, as well as evaluation meetings etc. informs teachers and students and allows continuous monitoring and balancing of workload. In addition, the new curriculum uses a new timing for the master thesis (outside the summer period). The monitoring of workload is part of the internal quality assurance procedure. Graduation rates based on the past 5 years show that approximately 70% (79%) of (ICP) graduates completed the master programme within the regular 2-year timeframe, 17% of students graduate later and 4% do not graduate. Importantly, 53% of ICP graduates acquire a grade of distinction or higher.

- To intensify the use of formal quality assurance procedures while involving the professional field. The committee appreciates the strong informal involvement of all stakeholders. Nevertheless, the committee suggests using the formalized structures more intensively.

Action taken: Partners from the professional field have been contributing to different courses as guest lecturers or through a part-time appointment at UHasselt (e.g. Johnson & Johnson, the International Drug Development Institute) as well as to master theses (e.g. the Scientific Institute of Public Health, GlaxoSmithKline). These partners can directly evaluate students' performance as well as the Master programme in view of what is expected of statisticians in their field. This double reflection allows for improvement of course content and for underscoring professional skills in the programme. The professional field now participates in formal evaluation meetings embedded in the internal and external quality assurance procedures.

- To base ICP scholarships on institutional manpower rather than on individual applications.

Action taken: The sustainability strategy as incepted in the recent ICP application fully meets this recommendation.

- The opportunity to strengthen the collaboration with other partners (e.g. Bioinformatics: Flemish Institute for Biotechnology - VIB) was listed.

Action taken: There is now existing research collaboration with people at VIB and VITO. CenStat also collaborates with partners from the pharmaceutical industry, technology industry and research sector within the Flemish ExaScience consortium to investigate high performance computing (HPC) applications to challenges in life science and industry.

2.2.2.2. SWOT analysis, as included in the Strategic Plan 2016-2022

The SWOT analysis presented in Table 1 is the result of a multitude of discussions at several occasions during the last years, including meetings of the Evaluation Committee, the OMT (especially those in preparation of curricular changes), the Blended Learning Working Group, workshops and discussion sessions at the Education Day(s), the CenStat and I-BioStat Board and Council, as well as informal discussions with Vice-rector Education, students, alumni, stakeholders from industry and governmental organisations, etc.

The columns SO 1 to SO 5 at the right and the cells with a "X" indicate the links of particular strengths, weaknesses, opportunities, and threats with the five strategic objectives (SO) as presented in Section 2.2.3 and 2.3.2.

Table 1 : SWOT analysis as included in Strategic Plan 2016-2022

Strengths					
	SO 1	SO 2	SO 3	SO 4	SO 5
Programme's perspective					
Educational program and didactic concept					
Unique, high level, international programme, based on CenStat's cross-fertilization between research, education and consultancy, and genuinely supported by the entire CenStat and in extension I-BioStat community.	X			x	
Strongly appreciated by and close cooperation with alumni and the three components of the work force: academe, industry and government, enforcing the broad network of contacts in all segments.	X			X	
Strong international embedding, strong involvement in the South as ICP programme.			X	X	X
Continuously professionalization of the organization of the study programme (including through benchmarking) with the aim to better achieve the learning outcomes (EC).	X			X	
Further implementation of employability skills.	X			X	
Innovation driven, synchronized with the newest scientific evolutions and pioneering in educational research and development.	X			X	
The learning pathway 'interconnectedness between research and education' is explicitly presented in the curriculum.	X			X	
The students get the possibility to develop their talents and ambitions in the project and in their individual master thesis.	X		X	X	

Evaluation program					
Permanent evaluation, optimization and update of the study programme of the master driven by input of all stakeholders and by CenStat/I-BioStat's dynamic strategic plan.	X	X		X	
The use of a wide range of evaluation methods (presentations, papers, written and oral evaluations, group works and selection board exams).		X			
The widespread use of formative assessment (take- home assignments).		X			
Conducting applied research in educational sciences.	X	X		X	
Learning environment					
The existence of broadly supported vision on learning environments.	X			X	
Professionalism in research and education of the teaching and administrative staff.	X			X	
The organisation of the educational time (self-study, lectures, home-work, etc.) divided into different blocks.	X		X	X	
The teachers representing a wide range of expertise in all areas of statistics and there's a high level of teacher mobility.	X			X	
The dedicated efforts of the administrative staff and the study path counsellor.	X		X	X	
Monitoring and improvement policy					
The use of student evaluations to improve the organization of the study program.	X	X		X	
Student's perspective					
Distance learning version of the master and reduced one-year version, making the study programme feasible for working students, students with limitations (financial, health related, etc.).	X		X	X	
The provision and improvement of the infrastructural facilities.	X		X	X	
The contribution of the student union JOSS.			X		
Newly graduated statistics find their way easily to the labour market.			X		

Opportunities					
	SO 1	SO 2	SO 3	SO 4	SO 5
Programme's perspective					
Educational program and didactic concept					
Growing influx of students from particular segments: working students, students admissible to one-year version, higher influx from Europe and Asia, higher influx in BIOINF & EPI-PH.			X		
Inflow from Bachelor of Mathematics programme, biomathematics trajectory, at UHasselt.			X		
Dedicated collaboration with master programmes at KULeuven, UAntwerp, and UMaastricht.	X			X	
Increasing national and international collaboration.	X			X	X
Increasing the visibility of the master programme using different media.			X		
Development, optimization and expansion of the curriculum of the ICP course programme.					X
Evaluation program					
Development and implementation of an evaluation program and a quality control of evaluation at all levels.	X	X		X	
Monitoring and improvement policy					
Improvement of the starting conditions of the students with less maths/stats background and/or with only a bachelor and no initial master degree (banama & manama).			X		
Improvement of the starting conditions of the students with a reduced one-year study programme.			X		
Student's perspective					
Possibility to apply for scholarships at external granting agencies (ICP, BCT, ...).			X		

Weaknesses					
	SO 1	SO 2	SO 3	SO 4	SO 5
Programme's perspective					
Increased number of responsibilities of limited ZAP (administration, management, etc.); too high workload for teaching teams.	X			X	
Underrepresentation of certain segments of students (the BIOINF and EPI-PH trajectories European students, working students).			X		
Evaluation program					
Difficulty to control quality of inflowing students			X		
Monitoring and improvement policy					
Studying the inflow and through-flow of students		X	X		
Student's perspective					
No graduation in June and insufficient time available for the individual thesis project			X		
For DL students: examination sessions only on campus in Diepenbeek		X	X		

Threats					
	SO 1	SO 2	SO 3	SO 4	SO 5
Programme's perspective					
Educational program					
Dependency on decisions taken by the government in general and VLIR-UOS in particular.	X			X	
Learning environment					
Dependency on availability of rapidly changing technology, especially related to blended/ distance learning.	X			X	
Student's (and programme's) perspective					
Dependency on and uncertainty about the magnitude of the tuition fees, and external granting agencies in general and ICP-scholarship in particular. The recent decision to increase the tuition fee from the academic year 2017-18 onwards to €906,1 for Flemish students and students on the VLIR list of economically developing countries, becomes a very serious threat from both perspectives, the students' as well as the programme's.			X		X

2.2.3. Strategy Summary

The SWOT analysis of the previous section 2.2.2.2 was the foundation for the strategic plan, in terms of our targets: **strategic objectives** (SOs) and **operational objectives** (OOs) translated into **actions**.

The following strategic and operational objectives (and corresponding actions) were set forward.

Strategic objective 1 reflects mainly the **vision** and relies on the **strengths** as mentioned in the SWOT analysis above, with special attention to:

- the evaluation and optimization of the study programme (OO 1.1)
- the importance of the employability skills (OO 1.2)
- the evaluation and optimization of the organization of the study programme (OO 1.3)
- innovative educational methods (OO 1.4)
- the professionalization of the teaching staff (OO 1.5).

Strategic objective 2 is fully dedicated to high-quality **assessment** and an optimized **evaluation** policy, based on existing strengths and referring to nice opportunities (see SWOT):

- evaluation as an integrated part of the educational process (OO 2.1)
- assuring a proper evaluation of all learning outcomes (OO 2.2)
- professionalization of teaching staff about innovative types of evaluation (OO 2.3)
- research in educational sciences on types of feedback and evaluation (OO 2.4).

The **student** is the central focus of **Strategic objective 3**, with reference to some weaknesses as formulated in the SWOT analysis:

- optimization of in-, through-, and out-flow of students, and in particular DL students (OO 3.1)
- promotional strategies towards specific target groups (OO 3.2)
- improvement of the starting conditions of students (OO 3.3)
- increasing the visibility of the programme to potentially interested students (OO 3.4).

Outreach, **collaboration**, partnerships, and **internationalization** are core values that form the main theme of **strategic objective 4**: collaboration with

- KULeuven (OO 4.1)
- UAntwerp (OO 4.2)
- Eindhoven University of Technology (OO 4.3)
- Maastricht University (OO 4.4)
- other partners within the framework of Erasmus programmes (OO 4.5)
- other partners within and outside Europe, formalized in MoU's (OO 4.6)
- all its stakeholders (OO 4.7)
- JOSS Board (OO 4.8).

Finally, **strategic objective 5** summarizes the main SOs and OOs of the **ICP strategic plan**. The ICP dimension of the master represents one of the major opportunities listed in the SWOT analysis:

- further development of the ICP specific curriculum (OO 5.1)
- stepwise extension to all specializations (OO 5.2)
- setting up institutional collaborations with the South (OO 5.3)
- advanced support for ICP students (OO 5.4).

The above SOs and OOs are formulated with more details, and concretized into actions.

The full strategic plan with all details *can be downloaded from this Google Drive*:

<https://drive.google.com/drive/folders/1ISAPCuyJO6Y3dZAJFNjBtz4f25Juwbpmp?usp=sharing>.

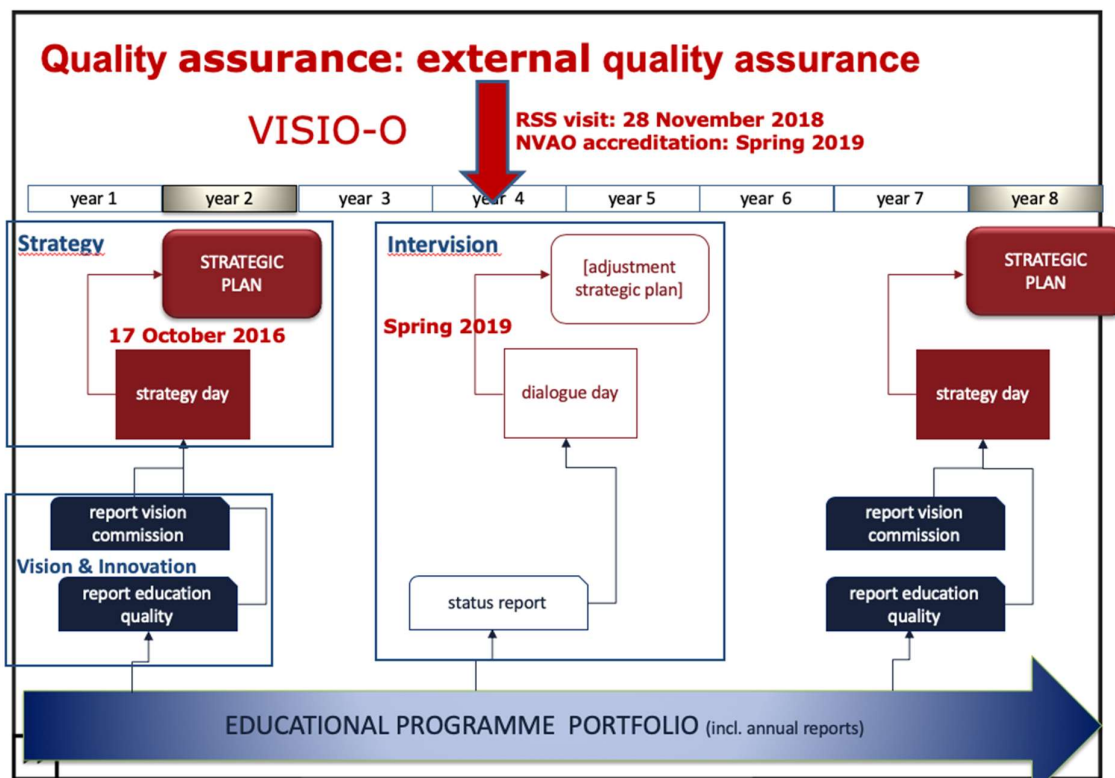
2.3. Current Status on Execution of Strategic Plan

2.3.1. Timing in the VISIO-O cycle

The Strategic Plan of the Master of Statistics was developed following the Strategy Day of October 17, 2016. The RSS accreditation consisted of two stages: i) the submission of an accreditation report on March 22 2018 and ii) the site visit on November 28 2018.

Being in year 4 of the 6-year cycle, a status report will be prepared and a dialogue day with the Vice-Rector Education and the Dean of the Faculty of Science will be scheduled for Spring 2019, as depicted in Figure 2.

Figure 2. The Master of Statistics embedded in the VISIO-O 6-year cycle



2.3.2. Major realizations (up to October 2018)

The table below presents an overview of the most important realizations in the context of the strategic plan until October 2018.

A more detailed execution status overview is available in the shared Google drive ⁴

Table 3. Major realizations of the strategic plan

Strategic objective	Operational objective	Result/ action
SO 1	<p>The Master of Statistics is a high-level academic training in statistics with the ambition to fulfil a leadership, exemplary role in the world of training in biostatistics, bioinformatics and methodology for epidemiology & public health, based on and synchronized with the main research themes of the Center for Statistics, and with attention to inclusive education.</p>	
	<p>OO 1.1 The OMT permanently evaluates, optimizes and updates the study programme of the master in general and the curriculum in particular, driven by input of all stakeholders and by CenStat/I-BioStat's dynamic strategic plan (updating and revising particular courses, curricular changes, introduction of new topics etc.)</p>	<p>Action 1.1.1 Inauguration of a renewed Advisory Board for the Master of Statistics, partly in common with the renewed Advisory Board for I-BioStat, with an international expert for each of the specializations.</p>
	<p>OO 1.2 The OMT amplifies the importance of employability skills (scientific integrity, consultancy skills, communication skills, good statistical practices, dissemination of statistical sciences, promoting the importance of statistics in the design and analysis of studies, skills to function appropriately in multidisciplinary teams, etc.) by defining and implementing ES learning lines at course and/or programme level.</p>	<p>Action 1.1.2 To examine the suitability and completeness of the current UHasselt (standard) surveys and its optional amendments and extensions, with special attention to particular target groups such as DL students, working students, and stakeholders. If needed, to complement or replace the UHasselt standard survey with additional (regular) targeted and customized surveys providing the proper insights, including insights in the role of social media groups as "educational" discussion fora (as popular alternatives to the Blackboard discussion board); to conduct the survey(s) and formulate conclusions.</p>
		<p>Action 1.2.1 To make an inventory of currently implemented employability skills (ES) in the OC master.</p>

⁴ <https://drive.google.com/drive/folders/1ISAPCuyJQ6Y3dZAjFNjBtz4f25Juwbpn?usp=sharing>

OO 1.3 The OMT evaluates the organization of the study programme based on all information available (reports of formal and informal meetings), and takes further actions to professionalize the organization of the study programme in all dimensions, including communication and interaction with students, counselling, professional attention to students from abroad, especially those from culturally diverse backgrounds, optimization of group dynamics, scheduling of activities and events, organization of master thesis work, maintenance of student and alumni records, etc.

Action 1.3.1 To organize the annual "Education Day".

Action 1.3.4 To organise semi-annual evaluation meetings with students and staff.

Action 1.3.5 To summarize all information on the organization of the Master of Statistics and to identify and implement improvement measures.

OO 1.4 Members of CenStat conduct applied research in educational sciences relevant for the Master of Statistics and the DL version in particular, in collaboration with the research group O3

Action 1.4.5 Conditional on data availability and suitability, data analysis and identification and interpretation of factors.

OO 1.5 The OMT investigates the professionalization needs of their staff and offers tailor-made workshops in own management or in collaboration with PER or OODI.

Action 1.5.1 To map the professionalization needs of the staff during the education day.

Action 1.5.2 To organize good practices workshops during the education day and within CenStat's regular seminar series.

SO 2 The OMT monitors the continuous dialogue on high-quality assessment between staff and students and develops and implements a proactive testing policy.

OO 2.1 The OMT ensures that the evaluation is embedded as an integrated part of the educational process.

Action 2.1.1 To develop a curriculum mapping of year 1 for the learning outcomes as defined in the preparatory phase of the VLIR-2015 visitation and for the (lifelong) employability skills as defined in UHasselt's mission and vision on education.

Action 2.1.2 To develop a curriculum mapping of year 2 for the learning outcomes as defined in the preparatory phase of the VLIR-2015 visitation and for the (lifelong) employability skills as defined in UHasselt's mission and vision on education.

OO 2.4 Members of CenStat conduct research in educational sciences on types of feedback and evaluation, in collaboration with the research group O3, and implements the most important results of the study in the courses.

Action 2.4.2 To explore and examine the use and usefulness of (digital) exams on distance at the programme level

SO 3	<p>The OMT develops and implements innovative strategies to recruit a talented, diverse student body (quality, specialization, nationality, gender, background) to maintain and expand the student population.</p>	
	<p>OO 3.1 The OMT implements and optimizes the in-, through-, and out-flow of DL Master of Statistics (admission of students, stimulating conditions and requirements, organisation of exam session off-campus, etc.).</p>	<p>Action 3.1.1 To fully offer the DL Master of Statistics, both years, all specializations</p>
	<p>OO 3.2 The OMT designs, develops and implements promotional strategies towards specific target groups (special promotion of the DL programme and the one-year version, special attention to bioinformatics and epidemiology & public health methodology specializations).</p>	<p>Action 3.2.1 To set up a working group on strategic promotion to identify the optimal promotional strategy with special attention to: distance learning, working students, European students, one-year version (separate actions, one or more brochures, etc.)</p> <p>Action 3.2.2 To develop promotional material in collaboration with the central communication and promotional services.</p>
	<p>OO 3.3 The OMT develops and implements different strategies to improve the starting conditions of the students, especially those with less maths/stats background and/or with only a bachelor and no initial master degree (banama & manama), as well as those with a reduced one-year study programme.</p>	<p>Action 3.3.1 To evaluate the maths & stats module, to examine the use by candidate students at the stage of application and by accepted students during their studies. To investigate how the module contributes to homogenize the diverse inflow of students.</p> <p>Action 3.3.3 To offer an e-summer school as preparatory module for year 1 and year 2 as well as for the one-year version.</p>

SO 4	<p>The OMT maintains and expands the outreach programs in terms of education, of course paired with research; to maintain and widen the basis of contacts with the outer world, including the alumni, the visiting faculty programme, and research, consultancy, and master thesis partnership.</p>	
	<p>OO 4.1 The OMT continues to maintain and expand the collaboration with the KULeuven at different levels (exchange of course units, teachers, joint courses/admission policy, etc.).</p>	<p>Action 4.1.1 Optimization of current and exploration of further collaboration, resulting in a revised formal framework agreement</p>
	<p>OO 4.6 The OMT continues to explore and set up collaboration with other Master of Statistics programmes in Europe and elsewhere in the world.</p>	<p>Action 4.6.1 Continuing, finalizing, and extending collaborations with other master programmes in Europe (including University of Santiago de Compostela, University of Vigo, University of Coruña, Medical University of Bialystok, Warsaw University, Charles University in Prague, etc), and elsewhere in the world (Vietnam, China, Uganda, Ethiopia, Suriname, etc).</p>

SO 5

The OMT achieves the strategic objectives of the ICP strategic plan.

OO 5.1 The OMT further develops and optimizes the curriculum of the ICP course program.

Action 5.1.1 To develop an optimized ICP curriculum

OO 5.2 The OMT extends the ICP study programme to all specializations.

Action 5.2.1 To extend and complete the ICP curriculum, including all specializations

3. RSS Accreditation Framework

3.1. RSS Accreditation

Since 2010 the UHasselt Master of Statistics acquired accreditation from the prestigious Royal Statistical Society (RSS), in force until 2017-2018. To obtain further accreditation, a new application according to the revised RSS accreditation procedure was required.

In 2013, the Royal Statistical Society (RSS) carried out a major strategic review of its activities. One of the key outcomes of this in-depth review was the decision to develop a revised accreditation model, in relation to a new set of standards for statistical education, initially at levels 6 and 7 of the national qualification framework⁵. The RSS document on the Master's (Level 7) Standards in Statistics is available on the shared Google Drive ⁶.

In offering accreditation, the RSS has two major objectives:

- To introduce more flexibility in the benchmarks for accrediting qualifications. The RSS will accredit only those programmes that deliver the skills and knowledge which will be required by students in their journey to become a Graduate Statistician⁷, and which appropriately assess the student against these.
- To build stronger partnerships with statistical education providers in the UK and abroad. Through a dialogue between providers about new developments in statistical education, the RSS will ensure that RSS accreditation standards continue to reflect changing needs across a broad range of sectors of employment.

Accreditation will be the process through which the RSS works with education providers to ensure that programmes in statistics, and its allied disciplines, meet quality standards. The RSS works collaboratively with education providers to accredit, help develop the quality and increase the relevance of programmes to students.

The RSS has a responsibility to develop and maintain standards in educational qualifications for those individuals who wish to follow a career in Statistics and allied disciplines. The RSS Accreditation scheme is set to become an important benchmark for Higher Education programmes.

Becoming an RSS accredited partner will provide the accredited institution and its students with a range of benefits. Through their Accreditation Scheme RSS will:

1. Recognize Excellence.
2. Increase the marketability of programmes in a competitive market place.
3. Provide students of a programme with a route to Society membership.
4. Provide students of a programme with a competitive edge in a challenging job market.
5. Provide employers with an assurance of the level of technical skills and knowledge provided by a programme.
6. Invite programmes to take part in the Accreditation Advisory Board.

⁵ Qualifications at Level 6 of the NQF equate to those at Level 6 of the European Credit Qualifications Framework (ECF). For the level 7 standard it is expected that the knowledge delivered would include much of the Level 6 core knowledge together with substantially more specialised/advanced knowledge than might be covered at Level 6. This knowledge would need to be delivered in such a way as to enable students to develop and demonstrate skills which map to the QAA MSOR benchmark standards (May 2015) for Master's degrees.

⁶ <https://drive.google.com/drive/folders/1ISAPCuyJO6Y3dZAJfNjBtz4f25Juwbpmp?usp=sharing>

⁷ Graduate Statistician (GradStat) is a grade of professional membership of our Society. It provides formal recognition of a member's statistical qualifications. From January 2019, any member awarded the status of Graduate Statistician will only be able to hold this title for a maximum of 10 years from the year it is awarded. Current holders of the Graduate Statistician status will continue to be able to hold this title until the end of 2029, meaning they have 10 years from 2019.

RSS has identified six key areas against which an institution's programme for accreditation will be considered. In awarding accreditation the RSS is seeking to ensure that a programme meets the RSS standards and that teaching, learning and assessment on the programme is of high quality and fulfils the needs of students and employers. The tables below outline the criteria the RSS uses to assess applications, together with requirements to be met and provides suggested evidence which an institution may wish to submit in support of each criterion.

Area 1: Learning, research and practice		
Accreditation criteria	Requirement	Suggested evidence
Your programme adequately addresses the curriculum or competency requirements as outlined in our standards, and reflects best practice in teaching and assessment.	<p>Your curriculum covers all core knowledge and skills as detailed in the RSS standard, and an appropriate balance of specialist content.</p> <p>Your teaching, learning and assessment strategy for the programme reflects good practice in statistics.</p>	<p>Completed curriculum or competencies mapping document. (For applications for multiple programmes, the institution may wish to submit more than one mapping document)</p> <p>Programme/s handbook</p> <p>Curriculum, research, placement (if appropriate) and / or other handbooks</p> <p>Programme/s specification</p> <p>Module handbooks (or module outlines if handbooks are not yet available).</p> <p>Student satisfaction data</p> <p>Information on staff and student / graduate publications (where relevant)</p>
Students' outcomes are positive, in terms of programme completion and employment outcomes.	Destination data suggest that a high proportion of students go on to further study or to gain employment following their programme.	<p>Pass / fail rates for the programme/s</p> <p>Destination data for students on the programme/s</p> <p>Student satisfaction data</p> <p>Employer's views of the programme</p>

Area 2: Selection and entry		
Accreditation criteria	Requirement	Suggested evidence
An approach to recruitment which welcomes diversity and actively promotes your partnership with the RSS.	<p>Clear recruitment criteria in place.</p> <p>An approach to recruitment which demonstrates positive action to encourage applications from under-represented groups.</p> <p>You will actively promote your accreditation partnership with RSS in your marketing materials.</p>	<p>Recruitment policies and guidance</p> <p>Links to existing web pages, and promotional materials. For those applying for accreditation for the first time you will need to provide information on how you intend to meet the requirements stated.</p>

Area 3: Supporting Personal and Professional Development		
Accreditation criteria	Requirement	Suggested evidence
Students are supported during their programme towards further progression on to higher level programmes or into employment.	<p>Students are given appropriate information about progression on to further learning and/or into employment.</p> <p>The benefits of membership of the RSS are provided to students and students are encouraged to take up student membership.</p>	<p>Relevant sections of the programme or student handbook</p> <p>Evidence that students are provided with information about membership of the RSS and its benefits</p>

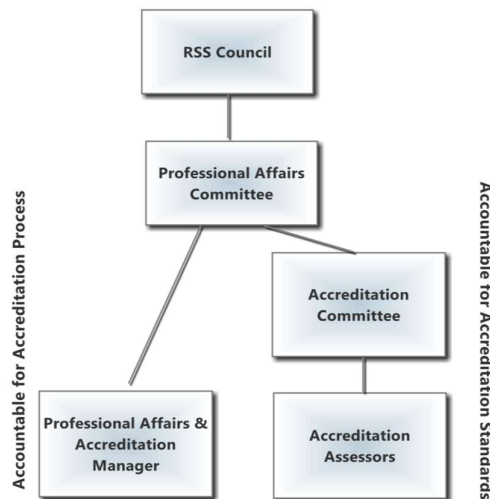
Area 4: Teaching		
Accreditation criteria	Requirement	Suggested evidence
Students have access to suitably qualified and experienced teaching staff; and a tutoring system that supports their personal and educational needs.	<p>Staff teaching on the programme have appropriate qualifications and experience to deliver the programme content.</p> <p>Teaching on the programme is regularly reviewed to ensure it embeds best practice and delivers the best outcomes for students.</p> <p>A tutoring system is in place to support individual student needs.</p>	<p>Brief biographies (or CVs) for all staff who make a significant contribution to the programme/programme delivery and development.</p> <p>A biography or CV for the Programme Director(s)</p> <p>Material/links for the student support/tutoring approach</p> <p>Student satisfaction data</p>

Area 5 : Resources		
Accreditation criteria	Requirement	Suggested evidence
Students have access to appropriate resources to support their studies.	Students' learning is appropriately supported regardless of their mode of study.	<p>Details of the key learning resources available to students, such as texts/learning resources (print and online), appropriate software tools, and specific and general learning facilities.</p> <p>For distance learning programmes, you will need to demonstrate that students have appropriate access to the above resources, or equivalent.</p>

Area 6 :Quality management		
Accreditation criteria	Requirement	Suggested evidence
A clear quality assurance framework in place at departmental and institutional level, and where appropriate, at inter-institutional level.	<p>A clear quality assurance framework at departmental and institutional level, and where appropriate, at inter-institutional level.</p> <p>This framework is in active use and it involves the participation of students.</p> <p>You actively seek to improve the programme by identifying areas for improvement and responding accordingly.</p>	<p>Details of your quality assurance framework</p> <p>Copies of minutes of key programme committees meetings for the last year e.g. Board of Studies, Programme Board and its subgroups.</p> <p>Copies of the most recent report by your external examiner(s)/quality team, and any resulting action plan</p> <p>Copies of reports by external advisory boards or industry representatives.</p> <p>Hyperlinks to any externally commissioned or QAA reports which relate to the programme(s).</p>

The accreditation regulations and process are overseen by the RSS Academic Accreditation Committee (AAC). AAC members are drawn from academic and practicing members of the RSS. The AAC is responsible for ensuring our standards for accreditation, as defined by the Professional Affairs Committee, are implemented appropriately and consistently across all programmes and education providers. The AAC will be involved in approving all initial applications for accreditation, based on recommendations made by the assessors. They have oversight of the overall schedule of accreditation visit and review activity. They will receive visit reports on accredited programmes which will allow them to see how standards are being used in delivery and to highlight areas of good practice. The AAC will have a role in identifying areas for wider consultation with delivery partners, considering any proposed amendments to standards and identifying training needs for assessors. Figure 3 shows the governance of the RSS Accreditation Scheme.

Figure 4: Governance of the RSS Accreditation Scheme



3.2. Individualised UHasselt Application Procedure

A self-evaluation questionnaire and a mapping document showing how the programme meets the accreditation criteria had to be completed. The supporting evidence requested had to be clearly indexed against the appropriate questions in the questionnaire. Where the specified evidence was not available, alternative evidence could be provided. The application had to be submitted in electronic format.

As the UHasselt Master of Statistics was already accredited by the RSS under its existing scheme, it was subject to a **fast-track accreditation process**. The outcome of the evaluation would be one of the following:

- Your programme/s fully meets the criteria for accreditation; your accreditation will remain in place.
- Your programme/s partially meets the criteria for accreditation, and would fully meet the criteria subject to successful fulfillment of one or more conditions, to be met within a specified timeframe.

Once received notification of accreditation, our programme/s would then be added to the RSS schedule of visits to take place in the next twenty-four months.

Individualised UHasselt Application Procedure

To comply with the NVAO Accreditation Procedure, the RSS was contacted for their agreement on the following modifications to the RSS fast-track accreditation process:

- The accreditation would not only be based on the electronically submitted application document but on a site visit as well. The decision whether the accreditation would remain in place would be taken based on the application document and the site visit.
- The Hasselt and the KULeuven Master of Statistics both obtained RSS accreditation in 2010. There is a close and formal collaboration between both masters, and the 2010 accreditation was based on a separate but simultaneously prepared and submitted application document, with clear reference to the collaboration. To consolidate this collaboration, the UHasselt and the KULeuven Master of Statistics both applied, again putting the close collaboration in picture, and also the accreditation of the KULeuven master would be subject to a site visit.
- The RSS accreditation visiting team would be extended with a student member: a KULeuven master student would be a member of the team visiting the UHasselt master, and a UHasselt master student would take part in the KULeuven site visit.
- Additional material including an update of relevant material of the application document, and a selection of master thesis reports would be available for the team members during the visit.

The RSS agreed with the proposed modifications and extensions of the standard RSS procedure. The application document as submitted on March 22 2018, is available on the shared Google Drive: <https://drive.google.com/drive/folders/1ISAPCuyJQ6Y3dZAJFNjBtz4f25Juwbpmp?usp=sharing> .

4. RSS Visit

4.1. Visit at UHasselt and KULeuven

The KULeuven site visit was scheduled for 27 November 2018, the UHasselt visit for 28 November. The visiting team was the same, except for the student member, being a UHasselt student for the KULeuven visit and vice versa.

4.1.1. The RSS visiting team

The members of the RSS visiting team:

- **Ricky McGowan**
- **Rosie Sweeny**
- **Prof. dr. Tony Bendell**
- **Margaux Delporte.**

All members participated in all sessions:

- session with a delegation of representatives of the Faculty of Sciences, the Education Office , the rectorate and the central management;
- session with the programme directors & support staff;
- session with a delegation representing the academic staff;
- session with a delegation of students & the ombudsperson;
- session with a delegation of alumni and working field.

Detailed information of the time schedule and the participants in the different sessions is provided in the next section.

4.1.2. Time table of site visit

The time table of the UHasselt site visit and of the different sessions (including the participants) is presented in Table 3.

Table 3: Time table of the RSS visit at UHasselt

Start	End	Session	Activity	Participants
8:30	8:45	Arrival and welcome	Welcome & practical matters	Marc Aerts, Peter Vandoren, Martine Machiels, Wouter Duchateau
8:45	9:15	Delegation University and Faculty	UHasselt & Faculty of Sciences policy on education. <i>An optional short presentation has been prepared.</i>	Karin Coninx, vice-rector Education Jan Colpaert, dean Faculty of Sciences Caroline Groven, staff member Quality Assurance, Education Office Marc Aerts, chair Educational Management Team (EMT)
9:30	10:15	Programme directors Master of Statistics & support staff	Discussion Master of Statistics. <i>An optional short presentation has been prepared.</i>	Marc Aerts, programme director (Epidemiology & Public Health Methodology) Geert Molenberghs, programme director (Biostatistics) Tomasz Burzykowski (Hangouts), programme director (Bioinformatics) Niel Hens, programme director (International Course Programme - ICP) Olivier Thas, future chair Educational Management Team (EMT) Jolien Notermans, staff member Education Development, Education Office Peter Vandoren, staff member Education, Faculty of Sciences
10:30	11:00	Delegation academic staff	Discussion with academic staff	Liesbeth Bruckers, coord. lecturer of "Nonparametric Methods", coordinator of the consultancy unit of CenStat Thomas Neyens, lecturer in several courses in yr 1 Ziv Shkedy, coord. lecturer of several general & specialist courses in yr 2 Francesca Solmi, coord. lecturer of "Linear Models" Dirk Valkenburg, coord. lecturer of several courses in specialisation "Bioinformatics" Sarah Verduyck, coord. lecturer of "Master Thesis Project", Olivier Thas, coord. lecturer of "Principles of Statistical Inference" and future chair EMT Tapiwa Ganyani, teaching assistant

11:00	11:30	Delegation students & ombuds	Discussion with students and ombudsperson	Melody Adesina, Epidemiology & Public Health (yr 2), student repr. EMT Thi Ngoc Mai Nguyen, Bioinformatics (yr 2), student repr. EMT Diego Rondon, Biostatistics (yr 1) Sofie Van Waes, Biostatistics DL (yr 2) Vestine Mukandayisenga, Biostatistics/ICP (yr 2), student repr. EMT Chellafe Ensoy, ombudsperson
11:30	12:00	Delegation alumni and working field	Discussion with working field and alumni	Luc Bijmens, Marc Buysse, Tony Vangeneugden, Tina Sotto: industry representatives (working field & alumni) Raf Meesen, Philippe Beutels : academic representatives (working field) Lisa Hermans, Evangelina Olajumoke Owokotomo (alumni)
12:00	14:00	Lunch	Further open discussion	Programme directors, alumni and working field, Sarah Vercruysse
14:00	15:30	Miscellaneous	Attending part of a lecture, internal RSS meeting, discussions on request of the committee, browsing material (course material, master theses, minutes of evaluation meetings, reports of surveys, ...)	Students and any participant, on request of RSS or on request of UHasselt
15:30	16:00	Preparation feedback RSS	Internal RSS meeting	
16:15	16:30	Feedback RSS	Feedback from RSS	Delegation of UHasselt and Faculty of Sciences, programme directors, staff members education

4.1.3. Additional documents available at the visit

Table 4 shows the new & additional documents available for the visiting team during their visit. The full document is available at the shared Google Drive ⁸.

Table 4: Overview of new & additional documents in the context of the RSS accreditation application

Area	Document title	Page range
1	Minutes of evaluation meetings 2017-18 (semester 2) and 2018-19 (semester 1)	2-22
	Overview of student satisfaction data on the programme (2017-18)	23-39
	Results of survey among students of the distance learning (DL) , alumni and stakeholders (Spring 2018)	40-76
6	Minutes of key programme committee meetings in 2017-18 and 2018-19	77-83
	Status report on the execution of the Strategic plan for Master of Statistics (Oct 2018)	84-87
Extra	Educational Policy Plan of Hasselt University 2018-2021	88-101
	Student Integrity Charter	102-103

During the visit, the team was also able to browse handbooks used in courses of the Master of Statistics (see Appendix 1 for complete list) and a representative sample of master thesis project of the past years (see Appendix 2 for complete list).

⁸ <https://drive.google.com/drive/folders/1ISAPCuyJO6Y3dZAJfNjBtz4f25JuwbpM?usp=sharing>

4.2. Conclusion

Ricky McGowan, the RSS Professional Affairs and Accreditation Manager, summarized the main conclusions of the team at the end of the visiting day, November 28 2018:

In general:

- The general impression of the programme is really positive;
- It is expected that the programme meets the MSOR level 7 standards, pending message to the contrary;
- Feedback from current students, alumni, industry and professors was really good;
- There is a clear benefit of the programme, in terms of what students and industry gain from it;
- The addition of soft skills and aim for students to become futureproof students is very appealing;
- The link, the partnership between the master of statistics programmes at UHasselt and KULeuven is perceived as very strong and considered as very important. There are some differences (such as the structure of the study programmes, different trajectories, ...) but a lot can be shared. It is something to be very proud of, and it will be interesting to see this partnership growing and extending further in the future.

Some points of attention at the time of review in 2021:

- Evidence of how monitoring data and related statistics (from the business intelligence system) have been used to recognize any issues and how already some steps are put in place to rectify such issues;
- Particular attention goes to the relatively low pass rates, knowing that there are differences between study programmes and that quality standards should be met. The numbers of last year shows some improvement already. But what is acceptable, what is the objective? What steps have been taken to improve pass rates?
- Related issues are the selection and entry criteria. What has been improved and how did it affect the pass rates?
- Particular information and feedback to students (information on the type of exams, examples of exam questions, way of marking exam questions, feedback on individual and group project etc) should meet some level of consistency across individual courses and professors. On the one hand it is also the responsibility of the student, but, on the other hand, a sufficient consistent way of offering feedback is also very important.

5. RSS Accreditation Decision

On December 19 2018, the EMT chair received a letter by email from Ricky McGowan, the RSS Professional Affairs & Accreditation Manager, confirming the extension of the RSS accreditation.

The email communication also included two formal reports from the RSS:

1. The report on the Accreditation Application.
2. The report on the Accreditation Visit.

The letter and both reports are included in the next pages of this document.

Marc Aerts
Universiteit Hasselt
Dienst Financiën
Martelarenlaan 42
3500 Hasselt
Belgium

December 2018

Dear Marc Aerts

Royal Statistical Society accreditation of university programme

Our Academic Accreditation Committee has reviewed your application. I am pleased to confirm that the following programmes have been accredited from 2017/18 up to 2020/2021:

- Master of Statistics

You will shortly be sent an RSS Welcome pack following this accreditation that will include a certificate confirming this award. You are welcome to draw attention to the accreditation in your publicity material. Enclosed within the Welcome pack will also be a number of promotional materials to help promote the Graduate Statistician award which we hope you will be able to make available to your students.

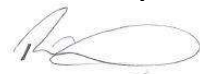
What happens next:

- Promote** - Use the promotional materials and certificate to advertise your new accreditation and encourage students to become Graduate Statisticians
- Save the date** – September 2019 is when you will be contacted regarding revalidating the accreditation by signing a declaration, as well as being invoiced for the yearly recognition fee.

Your programme will be included in the list published on our website when it is next updated. In the meantime, please do not hesitate to contact us if you'd like to receive further copies of the leaflet.

With thanks for your interest in our accreditation service.

Yours sincerely



Ricky McGowan
Professional Affairs and Accreditation Manager



Report on Accreditation Application

Name of institution: UHasselt

Programmes under consideration: Master of Statistics

	Area 1 Learning, Research and practice
Do they meet the criteria (Y/N)	Yes
How do they meet/not meet the criteria	Verbal & Written material presented.
Further evidence needed (Y/N)	No
If yes, what type of evidence	
Comment	
	Area 2 Selection and Entry
Do they meet the criteria (Y/N)	Yes
How do they meet/not meet the criteria	Verbal & Written material presented.
Further evidence needed (Y/N)	No
If yes, what type of evidence	
Comment	
	Area 3 Supporting Personal and Professional Development
Do they meet the criteria (Y/N)	Yes
How do they meet/not meet the criteria	Verbal & Written material presented.
Further evidence needed (Y/N)	No
If yes, what type of evidence	
Comment	
	Area 4 Teaching
Do they meet the criteria (Y/N)	Yes
How do they meet/not meet the criteria	Verbal & Written material presented.
Further evidence needed (Y/N)	No
If yes, what type of evidence	
Comment	
	Area 5 Resources
Do they meet the criteria (Y/N)	Yes
How do they meet/not meet the criteria	Verbal & Written material presented.
Further evidence needed (Y/N)	No
If yes, what type of evidence	

Comment	
	Area 6 Quality Management
Do they meet the criteria (Y/N)	Yes
How do they meet/not meet the criteria	Verbal & Written material presented.
Further evidence needed (Y/N)	No
If yes, what type of evidence	
Comment	
	General comments:
Feedback for the University/Institution	
Overall Comments	Good course, with a motivated professional course team and management although concerns on pass rate at around 50% & on students awareness of the assessment system.
Overall Outcome, is accreditation recommended?	Yes
Is the accreditation conditional based on certain modules, if yes then please state which modules for which course?	No

Report on Accreditation Visit

Name of institution: UHasselt

Programmes under consideration: Master of Statistics

	Area 1 Learning, Research and practice
Was evidence needed for this area? (If No move on to the next area)	Yes
Is there evidence of progress (Y/N)	Yes
Does this satisfy the concerns raised in initial report (Y/N)	Yes
How does this satisfy/not satisfy concerns raised	Verbal & Written material presented.
Any other comments	
	Area 2 Selection and Entry
Was evidence needed for this area? (If No move on to the next area)	Yes
Is there evidence of progress (Y/N)	Yes
Does this satisfy the concerns raised in initial report (Y/N)	Yes
How does this satisfy/not satisfy concerns raised	Verbal & Written material presented.
Any other comments	
	Area 3 Supporting Personal and Professional Development
Was evidence needed for this area? (If No move on to the next area)	No
Is there evidence of progress (Y/N)	
Does this satisfy the concerns raised in initial report (Y/N)	
How does this satisfy/not satisfy concerns raised	
Any other comments	
	Area 4 Teaching
Was evidence needed for this area? (If No move on to the next area)	Yes
Is there evidence of progress (Y/N)	Yes
Does this satisfy the concerns raised in initial report (Y/N)	Yes

How does this satisfy/not satisfy concerns raised	Verbal & Written material presented.
Any other comments	
	Area 5 Resources
Was evidence needed for this area? (If No move on to the next area)	Yes
Is there evidence of progress (Y/N)	Yes
Does this satisfy the concerns raised in initial report (Y/N)	Yes
How does this satisfy/not satisfy concerns raised	Verbal & Written material presented.
Any other comments	
	Area 6 Quality Management
Was evidence needed for this area? (If No move on to the next area)	Yes
Is there evidence of progress (Y/N)	Yes
Does this satisfy the concerns raised in initial report (Y/N)	Yes
How does this satisfy/not satisfy concerns raised	Verbal & Written material presented.
Any other comments	
	General comments:
Any other comments	
Feedback for University/Institution	
Overall Comments:	Good course, with a motivated professional course team and management although concerns on pass rate at around 50% & on students awareness of the assessment system.

Appendices

Key documents related to the RSS accreditation can be downloaded from this Google Drive : <https://drive.google.com/drive/folders/1ISAPCuyJQ6Y3dZAJFNjBtz4f25Juwbpmp?usp=sharing>

The following appendices provide additional information on materials and documents that were made available to the RSS committee during the site visit.

Appendix 1. List of handbooks available during the RSS site visit

Burzykowski, Tomasz; Molenberghs, Geert; Buyse, Marc (2005). The evaluation of surrogate endpoints (Statistics for biology and health). New York: Springer.

Molenberghs, Geert., & Verbeke, Geert. (2006). Models for discrete longitudinal data (Springer series in statistics). New York: Springer.

Molenberghs, Geert, & Kenward, MG. (2007). Missing Data in Clinical Studies. John Wiley; New York.

Fitzmaurice, G.M., Davidian, M., Verbeke, G., and Molenberghs, G. (2009) Advances in Longitudinal Data Analysis. London: CRC/Chapman Hall.

Molenberghs, Geert., & Verbeke, Geert. (2009). Linear mixed models for longitudinal data (Springer series in statistics). New York: Springer.

Niel Hens; Ziv Shkedy; Marc Aerts; Christel Faes; Pierre Van Damme; Philippe Beutels. (2012). Modeling Infectious Disease Parameters Based on Serological and Social Contact Data: A Modern Statistical Perspective, Springer New York

Lawson, Andrew B, & Lesaffre, Emmanuel. (2012). Bayesian biostatistics (Statistics in practice). Chichester: Wiley.

Lin, Dan, Shkedy, Ziv, Yekutieli, Daniel, Amaratunga, Dhammika, & Bijmens, Luc. (2012). Modeling Dose-Response Microarray Data in Early Drug Development Experiments Using R: Order-Restricted Analysis of Microarray Data (2012 ed., Use R). Berlin, Heidelberg: Springer Berlin Heidelberg.

Amaratunga, Dhammika, Cabrera, Javier and Shkedy, Ziv. Exploration and Analysis of DNA Microarray and Other High-Dimensional Data, John Wiley & Sons, Incorporated, 2014. ProQuest Ebook Central, <https://ebookcentral.proquest.com/lib/ubhasselt/detail.action?docID=1602916>.

Molenberghs, Geert, Fitzmaurice, Garrett, Kenward, Michael G, Tsiatis, AA, & Verbeke, Geert. (2015). Handbook of Missing Data Methodology (1st ed.). Chapman Hall/CRC; London.

Appendix 2. List of master thesis projects available during the RSS site visit

Table 5 : List of master thesis projects available during the RSS site visit

The table has been removed from this document, in accordance with GDPR.

