

Ergebnisbericht zum Verfahren zur Akkreditierung des Bachelorstudiengangs „Applied Data Science“ der Modul University Vienna Privatuniversität, durchgeführt in Wien

1 Antragsgegenstand

Die Agentur für Qualitätssicherung und Akkreditierung Austria (AQ Austria) führte ein Verfahren zur Akkreditierung des Bachelorstudiengangs „Applied Data Science“, durchgeführt in Wien gem § 24 Hochschul-Qualitätssicherungsgesetz (HS-QSG), BGBl I Nr. 74/2011 idgF, iVm § 2 Privatuniversitätengesetz (PUG), BGBl. I Nr. 74/2011 idgF, und iVm § 17 Privatuniversitäten-Akkreditierungsverordnung 2019 (PU-AkkVO 2019) durch. Gem § 21 HS-QSG veröffentlicht die AQ Austria folgenden Ergebnisbericht:

2 Verfahrensablauf

Das Akkreditierungsverfahren umfasste folgende Verfahrensschritte:

Verfahrensschritt	Zeitpunkt
Antrag eingelangt am	27.07.2020
Mitteilung an Antragstellerin Abschluss der Prüfung des Antrags durch Geschäftsstelle	03.08.2020
Bestellung der Gutachter/innen durch das Board der AQ Austria	08.09.2020
1. virtuelles Vorbereitungstreffen mit der Gutachter/innengruppe	02.11.2020
Übermittlung der Fragen der Gutachter/innen an die MODUL	16.11.2020
Antworten der MODUL auf die Fragen der Gutachter/innen	27.11.2020

2. virtuelles Vorbereitungstreffen mit der Gutachter/innengruppe	01.12.2020
Virtueller Vor-Ort-Besuch	02.12.2020
Nachreichungen nach virtuellem Vor-Ort-Besuch	09.12.2020
Vorlage des Gutachtens	15.01.2021
Gutachten an Antragstellerin zur Stellungnahme	15.01.2021
Stellungnahme Antragstellerin zum Gutachten	19.01.2021
Kostenaufstellung an Antragstellerin zur Stellungnahme	20.01.2021

3 Akkreditierungsentscheidung

Das Board der AQ Austria hat in der 65. Sitzung am 10.02.2021 entschieden, dem Antrag der Modul University Vienna GmbH vom 27.07.2021 auf Akkreditierung des Bachelorstudiengangs „Applied Data Science“, durchgeführt in Wien stattzugeben, da die Kriterien gem § 17 PU-AkkVO 2019 erfüllt sind.

Bezeichnung Studiengang	Art des Studiums	OrgForm	ECTS-Punkte	Dauer in SE	Verwendete Sprache/n	Akad. Grad/abgekürzte Form	Ort der Durchführung
Applied Data Science	Bachelorstudium	VZ	180	6	Englisch	Bachelor Science/BSc of	Wien

Die Entscheidung wurde am 08.03.2021 vom zuständigen Bundesminister genehmigt. Die Entscheidung ist seit 10.03.2021 rechtskräftig.

4 Anlagen

- Endgültiges Gutachten vom 15.01.2021.
- Stellungnahme vom 19.01.2021 zum Gutachten vom 15.01.2021.

AQ Austria, 1190 Wien, Franz-Klein-Gasse 5



Agentur für
Qualitätssicherung
und Akkreditierung
Austria

Expert report on the accreditation procedure for the bachelor programme “Applied Data Science” conducted in Vienna by the Modul University Vienna Private University

pursuant to § 7 of the Accreditation Regulation for Private Universities 2019 (PU-AkkVO)

Vienna, 15 January 2021

Table of contents

1 Basic principles for the procedure.....	3
2 Short information on the accreditation procedure.....	4
3 Review and assessment based on the assessment criteria stipulated in the PU-AkkVO	5
3.1 Assessment criteria § 17 (1) 1 to 2: Development and quality assurance of the degree programme	5
3.2 Assessment criteria § 17 (2) 1 to 11: Degree programme and degree programme management	7
3.3 Assessment criteria § 17 (3) 1 to 5: Staff	13
3.4 Assessment criterion § 17 (4): Funding	16
3.5 Assessment criterion § 17 (5): Infrastructure.....	17
3.6 Assessment criteria § 17 (6) 1 to 2: Research and development and/or the advancement and appreciation of the arts.....	18
3.7 Assessment criterion § 17 (7): Co-operations.....	19
4 Summary and final evaluation	20
5 Documents reviewed	21

1 Basic principles for the procedure

The Austrian higher education system

To date, the Austrian higher education system comprises:

- 22 public universities; including the Danube University Krems, a public university for post-graduate continuing education;
- 16 private universities, run by nationally accredited private entities;
- 21 universities of applied sciences, run by state-subsidised entities organised under private law or by nationally accredited public entities;
- the university colleges of teacher education, run by nationally accredited public or private entities;
- the philosophical-theological higher education institutions, run by the Catholic Church;
- the Institute of Science and Technology – Austria, which focusses its tasks on the advancement and appreciation of new fields of research and a post-graduate training in the form of PhD and postdoc programmes.

In the winter semester of 2019/2020, 288.492 students were enrolled at public universities (incl. the Danube University Krems). Furthermore, 55.203 students were enrolled at universities of applied sciences and 15.063 students at private universities.¹

External quality assurance

Pursuant to the Act on Quality Assurance in Higher Education (HS-QSG), public universities shall perform an audit procedure for the certification of their internal quality management system every seven years. There are no legal or financial consequences linked to the decision on certification.

Private universities require institutional accreditation conducted by AQ Austria every six years. After twelve years of uninterrupted accreditation, the accreditation may also be awarded for twelve years. Interim degree programmes and certificate university programmes for further education leading to a degree programme also require accreditation.

Following the six-year period of institutional initial accreditation, universities of applied sciences must be re-accredited. After that, they pass on to the audit system. However, the accreditation is linked to a positive decision on certification in the audit procedure. Before degree programmes may be offered, they must be accredited once.

Accreditation of private universities and their degree programmes

In order to be active as a higher education institution in Austria, private universities require institutional accreditation which must be renewed on a regular basis. In addition to institutional accreditation, newly established degree programmes must be accredited once before they may be offered by the private university. The Agency of Quality Assurance and Accreditation Austria (AQ Austria) is responsible for carrying out accreditation procedures.

¹As at February 2020, data source: Statistics Austria/unidata. Contrary to the data of the public universities, the student numbers of the universities of applied sciences do not include non-degree seeking students 264.945 degree students were enrolled at public universities in the winter semester 2019/20.

The accreditation procedures are carried out in accordance with AQ Austria's Accreditation Regulation for Private Universities 2019 (PU-AkkVO). Furthermore, the agency has based its procedures on the Standards and Guidelines for Quality Assurance in the European Higher Education Area.²

The AQ Austria appoints experts for reviewing accreditation applications. On the basis of the application documents and a site visit at the applicant institution, the experts draw up a joint written expert report. The Board of the AQ Austria then makes a decision on accreditation which is based on the expert report and takes into consideration the higher education institution's comment on the expert report. If the statutory prerequisites for accreditation are met and the required qualitative requirements are fulfilled, the degree programmes shall be accredited by official notification.

Before its entry into force, the official notification of the Board shall be subject to approval by the competent Federal Minister. After the procedure has been completed, a report on the outcome of the accreditation procedure as well as the expert report shall be published on the websites of AQ Austria and the applicant institution. Personal data and those parts of the report that disclose funding sources as well as business and operational secrets shall be exempt from publication.

The Act on Quality Assurance in Higher Education (HS-QSG) and the Private Universities Act (PUG) form the legal basis for the accreditation of degree programmes at private universities.

2 Short information on the accreditation procedure

Information on the applicant institution	
Applicant institution	Modul University Vienna Private University
Legal nature	GesmbH
Initial accreditation	30.07.2007
Last extension of accreditation	01.01.2015 (Decision I/A09-19/2014 of 19.09.2014)
Site/s	Campus Vienna, Campus Nanjing
Number of students	657 (Winter term 2018/2019)
Information on the accreditation application	
Name of the degree programme	Applied Data Science
Type of the degree programme	Bachelor Degree Programme
ECTS credits	180
Normal period of studies	6 semesters / 3 years
Number of study places	60/cohort and year
Academic degree	Bachelor of Science (BSc)
Organisational form	full-time
Language used	English

² Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG)

Site at which the degree programme is offered	Vienna
Tuition fees	6000€/semester

The MODUL University Vienna Privatuniversität submitted the application for accreditation on 29.05.2020. In its decision on 08.09.2020, the Board of AQ Austria appointed the following experts for the review of the accreditation application:

Name	Institution	Role in the expert panel
Dr. Patricia Feubli	Lecturer and Deputy Head Master (MSc) in Applied Information and Data Science, Hochschule Luzern	Expert with scientific and professional qualification
Dipl.-Ing. Dr. (M.A.) Robert Ginthör	CTO, Head of Big Data Lab, Know-Center GmbH	Expert with professional qualification
Matthias Lüth	Student Master of Science in Business Informatics, TU Dresden	Student expert
Univ.-Prof. Dr. Mag. Janette F. Walde	Professor, Department of Statistics, University of Innsbruck	Expert with scientific and professional qualification

On 02.12.2020 the experts and representatives of the AQ Austria conducted online-discussions with the representatives and the students of the Modul University Vienna Privatuniversität. These discussions were preceded by a list of questions from the expert-panel answered by the university in writing.

3 Review and assessment based on the assessment criteria stipulated in the PU-AkkVO

3.1 Assessment criteria § 17 (1) 1 to 2: Development and quality assurance of the degree programme

Development and quality assurance of the degree programme

1. The degree programme was developed using a predefined procedure for the development and establishment of degree programmes and involving the relevant stakeholder groups.

The Modul University Vienna Privatuniversität (MODUL) offers education in the fields of international management, new media technology, public governance, sustainable development, and tourism and hospitality management. Study programmes are offered in these fields including three Bachelor's degrees, three Master's degrees, and an MBA degree, as well as a PhD degree (accreditation documents). In the development of a study programme, several steps are required: 1) The University Board assigns the Dean of MODUL with the task of developing a new study programme. 2) The Dean together with a working group of experts develops the learning objectives, the profile, and the curriculum of the new study programme. 3) The curriculum and courses of the new study programme are discussed in School Conference meetings. 4) The University Board needs to give its final approval before submitting it to the

Board of AQ Austria. The School Conference was composed of faculty members who were/are actively teaching, the respective Programme Manager, the internship coordinator and two student representatives.

Four faculty members conducted a competitor analysis. Based on the competitor analysis, the University Board instructed this working group to develop a bachelor programme in the field of data science with a strong focus on applied data science. Two experts from the industry confirmed in a meeting that data scientists need to have a holistic perspective. In regular meetings, this working group established the profile and the objectives of the course programme and developed the study programme and the course syllabi. The Bachelor of Science in Applied Data Science was presented and discussed in two School meetings of the undergraduate study programmes and in one Senate meeting. The feedback of faculty and staff, including the Head of Marketing, the Head of the Academic Office, and the Quality Manager was incorporated. The name of the programme was discussed in the meetings of the undergraduate study programmes and the University Senate. The revised final programme was approved in another Undergraduate School meeting.

Two business leaders were interviewed to discuss the title of the programme and the range of scope of content in the study programme. In addition, external experts in the field of data science were consulted at an early stage and a later stage of the development of the new BSc Applied Data Science programme. No attempt was made to involve industry or potential employers in the discussions or to get feedback regarding the study programme, especially as these are the ones who should provide interesting internships and later on the supply of jobs. Nevertheless, all relevant stakeholder groups within the university were involved in the development of the degree programme.

The degree programme was developed using a predefined procedure involving all MODUL relevant stakeholders, therefore the experts consider the criterion to be **fulfilled**.

Recommendations:

In general, the active participation of external academic experts and industry partners in the development of a new study programme is recommended. Therefore, in the next revision or self-evaluation of the study programme, a stronger involvement of external experts would certainly be beneficial.

Development and quality assurance of the degree programme

2. Following its accreditation, the degree programme is incorporated into the private university's quality management system.

Findings and evaluations:

As described in the accreditation documents, MODUL has established a structure to take care of quality management with respect to the students-teacher relationship and the students. The Academic Office services the link between MODUL faculty and staff and the students, it is a service point for student-feedback and complaints and offers counselling to the students, especially on academic matters. Each study programme has a designated Programme Manager, which they can consult to advise students throughout their studies to learn more about the curricula and course of studies. In addition, the Open Office, composed of voluntary faculty members, provides a service to support and advise students during their studies at MODUL. All courses are evaluated electronically via the students.

The accreditation documents explain the quality management system MODUL has established over the years. The University Board is responsible for the development of the QM system and is supported by the Quality Support Manager (administering the course evaluation system), the Assistant to the President (in charge of overseeing applications and reapplications for accreditation) and the Sustainability Manager (providing general leadership on sustainability goals and initiatives). The course evaluations are at the core of this QM system. Students are given the opportunity to assess every course at MODUL through a standard evaluation questionnaire provided in the last unit of the course. The Quality Support Manager processes the results and provides each instructor with a detailed report of his or her course feedback.

The quality management handbook of MODUL clearly states that the internal quality assurance system of MODUL entails three key elements for the continuous development of Study Programme and Examination Regulations: the School Conference, which takes place every semester (Art. VII of the Constitution), the regular meetings of MODUL Marketing and Recruitment Department Heads and the Deans, as well as the annual Industry Advisory Board Meetings of the academic departments of MODUL. These advisory bodies provide feedback on the relevance of research and teaching at MODUL, as well as on the market demand and the competition in terms of course offer. This documented quality control is a guarantee that both a programme evaluation, especially of the new study programme, is planned on a regular basis and the market demand is evaluated. Furthermore, it is recommended to stay in contact with the first successful alumni and to survey them concerning their experiences. Upon request, it was confirmed that the guidelines of the quality management handbook of MODUL also apply to the new study programme.

Considering that the quality management system of the private university follows international standards and the degree programme is incorporated into this system, the experts consider the criterion to be **fulfilled**.

3.2 Assessment criteria § 17 (2) 1 to 11: Degree programme and degree programme management

Taking into account a heterogeneous student body, the following criteria shall apply. In the case of degree programmes with special profile elements, the descriptions shall furthermore address the characteristics defining the profile. Special profile elements are, for example, compulsory vocational practice, organisational forms which are offered alongside professional activity, distance-learning degree programmes, joint degree programmes or jointly offered degree programmes etc.

Degree programme and degree programme management

1. The degree programme is oriented towards the profile and the objectives of the private university and is clearly in line with the development plan.

Findings and evaluations:

The Development Plan of the MODUL 2020-2032 specifically addresses the creation of a new BSc in Applied Data Science. Also therein, the University's overall objectives are stated like to extend the University's expertise and portfolio in research and education, to make the first step to develop a profile of a multi-disciplinary University and to transfer faculty's knowledge and expertise to students. Therefore, the study programme is clearly in line with the University's objectives and the development plan.

In the accreditation documents, the described research areas of MODUL clearly emphasize the "applied" part of the new Bachelor of Science in Applied Data Science. The existing strengths of the teaching staff lie in applied research, with respect to the content in areas such as tourism and hospitality, and with respect to the methods in advanced statistical methods. Both of these areas complement each other and will benefit from an additional research team in Data Science. The additional benefit of combining more advanced methods of data science with content-related research questions is obvious. The new courses in the study programme are a methodical complement to the existing courses, and both parts, the new research group and the existing faculty staff, will benefit from the collaboration. In this respect, the new study programme is ideally suited to promote the exchange between content-related researchers and data scientists, from which the students will also benefit.

Hence, the experts consider the criterion to be **fulfilled**.

Degree programme and degree programme management

2. The profile and the intended learning outcomes of the degree programme have been clearly defined. They include scientific as well as artistic, personal, and social competences, they meet the professional requirements and are in accordance with the respective level of the National Qualification Framework. As regards regulated professions, the private university shall describe, if and under which preconditions access to those professions can be ensured.

Findings and evaluations:

The programme profile is clearly defined and its learning outcomes are clearly formulated in the proposal for the bachelor programme. These outcomes include what kind of knowledge is acquired, what kind of skills are learned, and which competencies are achieved by the students. Scientific skills and competencies are particularly obtained by incorporating current research findings into the courses; practical skills and competencies are especially acquired by accomplishing the internship. The learning outcomes of the internship also include social competencies, such as the ability to learn and work in a team, to improve written and verbal communication skills, and to manage and take responsibility for a small project. Of course, also in the academic part of the study programme, the ability to handle social interactions effectively is trained throughout the programme. Therefore, the competencies are in accordance with level 6 of the National Qualification Framework.

The experts consider the criterion to be **fulfilled**.

Degree programme and degree programme management

3. The name of the degree programme and the academic degree correspond to the degree programme's profile.

Findings and evaluations:

The name of the study programme 'Applied Data Science' and the degree's name 'Bachelor of Science in Applied Data Science' indicate that the bachelor programme's goal is to provide students with an understanding of the central aspects of Data Science like handling and getting data appropriately to identify relationships and extract valuable information. Because of the use of 'applied' in the programme's name, a clear focus is established so that in this study programme students learn to apply the methods of Data Science to applications and improve their knowledge by hands-on-working with practical problems. The programme's requirements imply that students take courses that cover programming languages, methods of data

management, and methods of extracting information out of the data like machine learning techniques. Such courses are included in the description of the study programme both at a beginner as well as at a more advanced level. As the data science knowledge is applied to content-related questions and even further to a practical problem in the internship in the area of Business and Management, students have to take courses with respect to these application areas. The content-related courses are limited to Business and Management and in this respect, the programme name 'Applied Data Science' is broader than the contents covered by the curriculum. However, having the knowledge, skills, and competencies of the study programme allows the students to apply their knowledge also to various other interesting areas. As such, the broader name of the degree programme is a proper reflection of the programme's profile.

The academic degree for the bachelor programme is 'Bachelor of Science (B.Sc.) in Applied Data Science'. The profile of the programme is clearly defined, and since the study programme in applied data science covers far more technical aspects in its education than social science aspects, the proposed name of the degree is appropriate and meets international standards, therefore the experts consider the criterion to be **fulfilled**.

Degree programme and degree programme management

4. The contents and structure of the curriculum ensure that the intended learning outcomes are achieved, while combining research (research and development and/or advancement and appreciation of the arts) and teaching.

Findings and evaluations:

The programme's intended learning outcomes are clearly defined and trifold: knowledge (theory and practice in the fields of database management systems and distributed computing, native, virtual, or cloud environments, specialized knowledge in state-of-the-art data science tools such as Machine Learning, Artificial Intelligence, and Blockchain, as well as statistical methods and optimization regarding complex problems in real scenarios and their solution, limitations of own knowledge base when pertaining to the respective professional field), skills (conceptual and technical skills in data science, data science programming languages (R, Python), in the analysis of big data extracted from the Web and Social Media, and in statistical and computational data processing and analysing high dimensional and complex data from unstructured sources, predict and monitor evolutionary phenomena, communicate data analysis results via presentations and reports with visualization tools) and competences (problem solving in complex environments, hands-on and think-out-of-the-box problem-solving approach, managing own work and working with others, reflective learning and career advancement).

A comparison of these learning outcomes with the course syllabi reveals two shortcomings: Cloud environments/computing techniques (not to be confused with university cloud solutions as appropriate infrastructure for students) and Big Data analytics/techniques are not included in the syllabi explicitly. However, the modules named "Fundamentals of Data Science and Engineering" and "Fundamentals of Web Programming and Application Development" are perceived to include these important topics. Thus, all learning outcomes are provided within the study programme.

The combination of research and teaching is well-balanced. Each module combines research-oriented lectures & seminars and seminars with lectures & exercises and interactive lectures in such a way that research gets a minimum weight of 30%.

The experts consider the criterion to be **fulfilled**.

Recommendations:

A more explicit focus on cloud environments/computing techniques and Big Data analytics/techniques in the corresponding syllabi as well as in the programme is recommended. This is an expected basic education of Bachelor graduates in Data Science.

Degree programme and degree programme management

5. The didactic conception of the degree programme's modules shall ensure that the intended learning outcomes can be achieved and promotes the students' active contribution in the learning process.

Findings and evaluations:

Generally speaking, a didactic concept aligns learning outcomes, assessments/examinations and teaching environment/forms of teaching. Lectures enable students to learn and know facts, methods and concepts, whereas seminars, exercises and student projects enable students to understand, explain, apply and evaluate methods and concepts as well as to demonstrate their mastery of data science skills.

As shown in the accreditation documents, all five modules of the programme cover the three learning outcome levels knowing, understanding and problem solving and comprise a combination of lectures, exercises, seminars and projects. Correspondingly, assessment formats include written exams, quizzes, in-class participation as well as project presentations (written and oral). Thus, learning outcomes, teaching formats and assessments are aligned. The didactic conception of the modules ensures the achievement of the intended learning outcomes. The assessment of in-class participation, homework assignments and project presentations ensure the students' active contribution to the learning process.

The experts consider the criterion to be **fulfilled**.

Degree programme and degree programme management

6. The workload related to the individual modules ensures that the intended learning outcomes can be achieved within the stipulated duration of studies, and in case of part-time degree programmes takes into account any professional activity. The ECTS is applied correctly.

Findings and evaluations:

The workload is specified by the university as 25 hours per ECTS and is thus within the planned workload for a bachelor's degree program. The modules are distributed evenly over the semesters with 30 credit points each, so that an even workload can be assumed over the different semesters.

The teaching concept is based on continuous attendance and study-accompanying examination of the learning progress. Combined with the establishment of incentives for independent and self-organized study, a consistent workload is ensured.

The appropriate workload is basically confirmed by the survey of students of the subject-related courses. In some modules there are individual personal deviations, so that higher workloads occur in individual cases due to different prior knowledge. However, this balances out over the entire course of study. It can therefore be assumed that the learning outcomes can be achieved within the prescribed duration of study.

The experts consider the criterion to be **fulfilled**.

Degree programme and degree programme management

7. The private university has adopted examination rules. The examination methods are suitable to assess whether and to what extent the intended learning outcomes have been achieved.

Findings and evaluations:

The accreditation documents contain the programme's examination regulations. They define the number and form of assessment for each course format, the grading of courses as well as the conduct of examination (e.g. the duration of exams).

The examination regulations meet expectations of the expert group. They were developed by the university in the Studies and Examinations Committee on the basis of experience in other programs and confirmed by the Senate. Students, basically, had the opportunity to participate in these by sending representatives.

The examination forms are very diverse and a good mix of different competence checks is achieved, e.g. knowledge reproduction in examinations and tests, presentations as well as independent and self-directed assignments and reports. Due to the small-scale examinations, small certificates of achievement are already provided throughout the semester. The examination load could be reduced by combining individual examinations, however in the discussion with the expert panel, students did not criticize this. Basically, the examination regulations are suitable to assess the intended learning outcomes. Therefore, the experts consider the criterion to be **fulfilled**.

Degree programme and degree programme management

8. A "diploma supplement" that complies with the requirements laid down in Annex 2 to the University Student Records Decree 2004 (UniStEV) will be issued.

Findings and evaluations:

The diploma supplement has been provided in the accreditation documents. It complies with the requirements laid down in Annex 2 to the University Student Records Decree 2004 (UniStEV). The diploma supplement will get either an official stamp/seal or it is officially signed according to art. 19 of the E-Government Act, BGBl. I No. 10/2004, as amended and has the legal proof of a public document.

The experts consider the criterion to be **fulfilled**.

Degree programme and degree programme management

9. The admission requirements have been clearly defined. In terms of the qualification level, they correspond at least to the provisions provided by the Universities Act 2002 (UG), F. L. G. I no. 120/2002.

Findings and evaluations:

Upon request it was stated in writing that, in terms of qualification level, the Universities Act (UG §63) specifies the following admission requirements that are applicable in the case of the BSc in Applied Data Science: (1) General university entrance qualification and (2) Knowledge of English if the study programme is held in English and proof of such knowledge. The admission requirements are clearly laid out in the application documents (Study Regulations of the BSc in Applied Data Science §4). These include minimum English language requirements (English proficiency level B2) and further documents that need to be submitted for evaluation as proof

of academic record, curriculum vitae, letter of motivation, and a letter of recommendation from academic sources. Upon request, it was assured that a recommendation letter from high school teachers is acceptable as a letter of recommendation from academic sources. A secondary school leaving certificate equivalent to a general university entrance qualification is required. In terms of the qualification level, the admission requirements correspond to the provisions in the Universities Act (UG §63). Finally, the Admissions Committee may conduct an interview with the applicant. The interview may take place either in person, via video conference, or telephone. It serves to clarify unanswered questions raised during the application process and to check if the applicant's expectations, personality profile and his/her knowledge of English are in line with what the programme offers, if knowledge on level B2 is not proven by submitting one of the accepted certificates (TOEFL: 76 Internet-based test (IBT); or-IELTS: overall band score 6.0 (no sub-score below 5.5); or-Cambridge English Certificate (Cambridge English: First (FCE): B2)).

The admission requirements are clearly laid out in the application documents, and, in terms of the qualification level, they correspond at least to the provisions provided by the Universities Act (UG). The experts consider the criterion to be **fulfilled**.

Degree programme and degree programme management

10. The admission procedure has been clearly defined and ensures a fair and transparent selection of the applicants according to the admission requirements and the required competences.

Findings and evaluations:

The admission procedure is provided in the accreditation documents. The Admissions Committees (Art. IX of the Constitution) are responsible for conducting the process of admission. The Admission Committee for the study programme Applied Data Science is nominated annually by the University Board and is composed of at least one representative of the faculty and one representative of the administrative staff (usually a staff of the Admissions Office). The Admissions Committee is responsible for evaluating the applications for study places according to the established academic and formal criteria specific to each study programme. Candidates first submit their application online via MODUL's application website. The Admission Committee reviews the applications and the Admissions Office conducts an interview to assess the motivations and the profile of the student. The interview with applicants, designated as optional in the accreditation documents, is always conducted, according to the information given during the online discussions with MODUL. Since the capacity limits have not been reached so far, an interview usually does not lead to rejection if the formal conditions are met. The Admissions Committee also informs the applicants about their responsibilities and obligations toward the institution. No appeal can be made against the decision of the Admission Committees. The President conducts the formal admission of the students to the Vienna campus. The admission procedure is finalised upon the signature of the study contract, which binds the new student and MODUL.

The admission procedure has been clearly defined and ensures a fair selection of the applicants. The experts consider the criterion to be **fulfilled**.

Recommendations:

Although not yet necessary but for the preferable case of more applicants than study places, a criterion catalogue should be worked out, according to which applicants can be ranked in a fair and reasonable way.

Degree programme and degree programme management

11. The recognition procedures for higher education competencies and, if applicable, competencies acquired outside higher education in terms of crediting towards examinations or parts of a degree programme have been clearly and transparently defined. When recognising or crediting higher education competencies, the Convention on the Recognition of Qualifications concerning Higher Education in the European Region (Lisbon Recognition Convention) shall be considered.

Findings and evaluations:

MODUL has a credit recognition policy, which is outlined in the "Examination Regulations and Student Code of Conduct" and considers the Convention on the Recognition of Qualifications concerning Higher Education in the European Region (Lisbon Recognition Convention). External credit transfers are possible, an application for credit transfer must be submitted by the student before the first semester or at the earliest opportunity prior to the commencement of the subsequent semester. All requests for credit transfer are subject to equivalency evaluation that is based on a review of course contents, outline, methods, and final grade. The practical experience acquired by the student prior to enrolment can be credited towards an internship when in accordance with the respective study regulations. External credit transfers must always be approved by MODUL's Dean. The Dean consults an internal faculty member with expertise in the respective subject if the Dean does not have the expertise to judge if the content of the requested course is equivalent to a MODUL course. Liaison officers discuss potential credit transfers gained at a partner university in advance of exchange semesters. However, also in this case, the final decision is made by the MODUL's Dean.

Credits for courses completed at a university abroad are in principle also possible after the stay abroad, although the university advises against this. The crediting of achievements that fit into the study programme but are not offered by the university itself is only possible in exceptional cases.

The experts consider the criterion to be **fulfilled**.

3.3 Assessment criteria § 17 (3) 1 to 5: Staff

Staff

1. The private university shall provide for sufficient scientific and/or artistic staff as well as sufficient non-academic staff for operating the degree programme.

Findings and evaluations:

The courses cover a total of 70 teaching hours per year when the programme is fully established after 3 years. As explained during the online discussions with MODUL, of these 70 teaching hours, 38 will be covered by regular staff, while only 8 hours will be assigned to external lecturers. In the academic year 2021/2022, two new faculty members (a full professor and a senior lecturer) will be hired to teach the remaining hours. If there are delays, it will be necessary to shift teaching loads from faculty in other programmes at MODUL to the new BSc in Applied Data Science programme. However, both during the site visit and in the documents sent afterward, MODUL assures that such a shift would not be a major problem, as the internal teaching load of the already established programmes is actually 68%. The new programme involves more than 10 full-time equivalent internal faculty members, 9 of whom hold PhDs. Thus, MODUL provides sufficient academic staff to operate the programme.

Beyond the department-specific staff, MODUL also has several non-academic offices (Academic Office, Admissions & Services, Events & Facility Management, Information Systems Services, Library Services, Student Services & Career Centre) and staff members who provide support in operating the degree programme. In total, MODUL has more than 18 full-time equivalents, non-academic staff for all degree programmes. MODUL, therefore, provides sufficient non-academic staff for operating additionally the degree programme Applied Data Science.

The experts consider the criterion to be **fulfilled**.

Staff

2. The relation between permanent scientific and/or artistic staff and students shall be in accordance with the profiles of the respective degree programmes. Permanent staff here means working at least 50% of one's total working hours in salaried employment at the private university.

Findings and evaluations:

From the 18 teachers involved in the new study programme, there are five external lecturers and 13 teachers are at least 50% working primarily at the MODUL, 8 have full-time jobs at the MODUL. These faculty members include 3 tenured full professors, 1 associate professor, 5 assistant professors, 4 lecturers, and 5 external lecturers.

The teacher to student ratio is about 5:1. In the accreditation documents, it is specified to be precisely 4.6 students per faculty member teaching in the study programme at full capacity. This ratio is very beneficial for students compared to international standards.

Therefore, the experts consider the criterion to be **fulfilled**.

Staff

3. The subject-specific core competencies of the degree programme are covered by permanent professors.

Findings and evaluations:

In the accreditation documents the core competencies for the planned study programme Applied Data Science are defined as 1) Statistics and Calculus, 2) Data Science and Engineering, 3) Data Science for Business Applications and 4) Fundamentals of Management. These core competencies are comparable with international study programmes of similar content like the Master programme MSc Data Science at the Technical University in Vienna, the Bachelor study Statistik und Data Science at the JKU in Linz, or the BSc Data Science at the IT University of Copenhagen. They are also comparable to core skills in international companies such as IBM or Tableau, for example, required from applicants for data science positions. Courses in the first core area of core competencies are provided by the permanent staff of the MODUL (one full professor). The courses concerning Data Science and Engineering are held by MODUL staff as well (two full professors including the newly hired professor). Two full professors of the MODUL (including the newly hired professor) are involved in the courses of the third core competencies area. Fundamentals and Management are covered by one full professor and an associate professor of the MODUL. Thus, the subject-specific core competencies of the degree programme are covered by professors in primary occupation at the MODUL.

Therefore, the experts consider the criterion to be **fulfilled**.

Staff

4. The scientific staff or the artistic staff, respectively, is qualified according to the requirements of the activities provided for in the degree programme.

Findings and evaluations:

The CVs attached to the application documents of the MODUL show, that the majority of the scientific staff members hold a PhD. The publication list of the full professors and the associate professor as well as their academic contributions are of high quality (e.g., papers in journals of high reputation and they are actively participating at conferences). All already existing activities are more concerned with applications using statistical methods. Even if advanced statistical methods are applied and, for a few scientific contributions, more artificial intelligence methods are used, this work is still not directly in the core area of data science. However, the available staff is for sure qualified for covering the core competencies 1) Statistics and Calculus, 3) Data Science for Business Application and 4) Fundamentals of Management as well as partly 2) Data Science and Engineering. The planned full professorship and assistant professor are going to fill the gap in the core area of Data Science, so that the qualification profile of the staff for the new study programme will be sufficient. As affirmed in the online discussions by the rector, while the call for the new professor is broadly worded, as different core research areas are of interest and importance to MODUL, there is also an awareness that important Data Science areas may need to be supplemented further by additional staff in the near future. With this in mind, the experts consider the criterion to be **fulfilled**.

Staff

5. The prioritisation of the permanent scientific or artistic staff's teaching, research, and administrative activities ensures adequate participation in teaching in degree programmes and leaves sufficient time for research and development or the advancement and appreciation of the arts.

Findings and evaluations:

According to the information provided in the accreditation documents, faculty members have a teaching load that depends on their academic position and on their employment status. Thus, full professors have a teaching load of 30% of their employment status, associate/assistant professors have either 30% or 60%, senior lecturers have 60% and researchers/lecturers have 25%. This teaching load compares favourably to international standards and therefore leaves sufficient time for research and development (of course 30% is preferable for assistant professors to provide enough time for research). At the site visit, the information was given that MODUL provides the possibility that staff members can teach extra hours and then are paid additionally. However, these extra hours have to be added to the regular weekly workload. It was assured that this additional teaching load is based on a voluntary basis and that the staff members find the necessary time and support to do research. Therefore, the experts consider the criterion to be **fulfilled**.

Recommendations:

The low research output of some faculty members in 2020 suggests that even today and without the additional teaching load in the new degree programme, there are already some difficulties to combine the existing teaching load and administrative workload with high research output. This somehow contradicts MODUL's dedication to research, as stated in the application

documents. The experts recommend a stronger awareness of this threatening imbalance and consider it important to define measures to rebalance teaching load, administrative workload and research in the long run.

3.4 Assessment criterion § 17 (4): Funding

Funding

The degree programme's funding is secured. Provisions have also been made to fund expiring degree programmes.

Findings and evaluations:

The initial application contains a business plan showing the financial management (income and expenses) for the academic years 2021/22 to 2031/32. A more detailed business plan has been submitted by MODUL on request after the virtual site visit. This plan contains extended tables showing the teaching costs of the new faculty members to be hired, teaching costs of members of other departments who will teach in Data Science as well as the teaching costs of external lecturers. The income is based solely on the fees collected from students. For the calculation, an average study fee - taking various costs of sales and discounts like early birds into account - as well as an annual dropout have been taken into consideration based on experience in other undergraduate programmes of MODUL. Further, the calculation assumes a continuous increase in the number of students enrolled each year, starting with 20 students in the first academic year 2021/22 and reaching the full 60 students per class in 2031/32. This growth is accounted for by assuming that two groups will be run per cohort beginning with the academic year 2025/26. The resulting additional teaching hours and costs are accounted for accordingly in the finance plan.

The expenses mainly consist of personal costs for teaching. These costs encompass also costs for language courses as well as the costs for hiring one additional administrative staff (programme manager, full-time) who will support the Dean in managing the study programme. For capital expenditures, cost items for "Quality Management" - a budget mainly for further education of lecturers and organisation of the planned industry advisory board - for "Travels", for "ÖH & Copyright Fees", for "Events" (e.g., costs for organizing job fairs for students), and for "Learning Material" have been included into the finance plan. A specification of the cost item "Learning Material" has been handed in on request after the online discussions. It describes this item as a budget mainly foreseen for purchasing technical equipment (notebooks) for students who do not have the appropriate equipment to participate in the study programme and for the development costs of a data centre and other server services scalable to the needs of the Applied Data Science department. The expenditures for "Learning Material" start with 50.000 Euro in 2021/22 increase continuously year for year and end with 150.000 Euro in 2031/32. These estimated costs seem reasonable.

The finance plan intentionally does not consider facility costs, as according to the statements of MODUL's management during the online discussions visit neither the acquisition nor the operation of additional infrastructure is necessary. That is the only premises already in operation will be used. Overall, there is an estimated positive contribution margin from the year 2022/23 on. In 2031/32 a contribution margin of nearly one million Euro is expected. MODUL sent after the online discussions a list of revenues and costs deliberately not included in the existing financial plan. These are revenues and costs of the foundation programme, revenues from retake fees, discounts for credit transfers, overheads generated from research projects of new faculty, travel costs of external lecturers, costs for the organization of the graduation

ceremonies, costs for hiring and releasing faculty, costs for other administrative services (library, accounting, IT, management, cafeteria, office material, representations), and rental and heating costs. MODUL expects these costs to be covered by the contribution margin.

The proof of funding for expiring study programmes is provided by the Letter of Comfort ("Patronatserklärung") issued by Talents Squared Limited, shareholder of MODUL, on July 17, 2019. The last paragraph of the letter states: "In the event of a termination of the letter of comfort in accordance with the foregoing paragraph and thus the termination of operations of MODUL University Vienna, Talents Squared Limited will make provisions for conducting discontinued study programmes until the end of the current programme duration for all on-going study programmes". Furthermore, Talents Squared Limited commits in the Letter of Comfort to manage and fund MODUL University Vienna such that the university can at any time fulfil its current and future obligations on a timely basis.

In summary, the finance plan shows a sufficient contribution margin to cover further non-stated costs. Due to this as well as due to the given Letter of Comfort of Talents Squared Limited the experts consider the criterion to be **fulfilled**.

3.5 Assessment criterion § 17 (5): Infrastructure

Infrastructure

Quantitatively and qualitatively adequate facilities and equipment are provided for the degree programme. In the case that the private university draws on external resources, their authorisation to use them has been contractually secured.

Findings and evaluations:

The Data Science study programme will be taught in the existing premises at Kahlenberg for which MODUL has an unlimited rental agreement. The corresponding contract is attached to the application for accreditation. A timetable showing the planned room assignments of all study programmes including Data Science has been provided. From this it can be seen that there is enough room capacity. The majority shareholder of MODUL further mentioned in the online discussions that there is the possibility to rent new space at Kahlenberg if needed. Since it was not possible to inspect the class rooms in real, MODUL submitted floor plans, photos and videos of the building and rooms like class rooms, library and auditorium. They show modern offices and class rooms that are well equipped, for instance with projectors and smartboards. The library can also be used by the students as work/study space. All this has been confirmed by the students who have been interviewed during the online discussions.

Regarding software and hardware infrastructure, Moodle is used as e-learning platform. Students have access to Microsoft office packages; MS Teams is used for remote and online teaching. Furthermore, students of the Data Science programme will be provided with appropriate (open-source) software packages like PyCharm, Anaconda or RStudio. No dedicated on-premise hardware (e.g., server clusters for big data analysis or GPU clusters for deep learning) is available. There is a budget for learning materials - see assessment criterion §17(4): Funding - which includes the purchase of such hardware infrastructure if needed. However, during the interview, the teaching staff expressed they would prefer to use cloud-based systems. This was also confirmed by the majority owner, who has already made investments in this regard. His UK-based IT team will also support MODUL's IT team in the expansion/upgrade of the cloud-based infrastructure.

The experts consider the criterion to be **fulfilled**.

3.6 Assessment criteria § 17 (6) 1 to 2: Research and development and/or the advancement and appreciation of the arts

Research and development and/or the advancement and appreciation of the arts

1. The permanent scientific and artistic staff assigned to the degree programme is involved in the private university's relevant research and development activities.

Findings and evaluations:

According to the accreditation documents and the conversations with the private university's faculty, research is one of the core values and guiding principles of the university. At its beginnings, the university focussed on tourism, new media technology, sustainable development and governance. Today, the university also covers new interdisciplinary research fields such as entrepreneurial challenges in a fast changing environment, challenges of time-space-compression in a globalized economy, transition management approaches etc.

The CVs incorporated in the accreditation documents, as well as the list of projects and research outputs available on the university's website, show that generally, the permanent scientific staff assigned to the degree programme contributes actively to the aforementioned research fields. The low research output of some faculty members in 2020 reveals some difficulties to combine heavy teaching load and administrative workload with high research output. However, provided the private university is aware of this issue, these cases can be considered either as a temporary phenomenon or as an exception.

The experts consider the criterion to be **fulfilled**.

Research and development and/or the advancement and appreciation of the arts

2. The (planned) research performance of the permanent scientific or artistic staff assigned to the degree programme are in accordance with the university's approach and the respective subject culture.

Findings and evaluations:

The content and structure of the programme's curriculum combine research and teaching. To be able to guide students through applied data science related research projects, faculty members assigned to the degree programme are required to be involved in applied data science related research themselves.

Upon request, the private university provided a list of all relevant and topic related journal publications and conference papers (within the last 5 years) of the (optional) permanent staff foreseen in the study programme. A review of the topics shows that the majority of those publications and papers are indeed related to applied data science. Due to the private university's initial research focus, the publications and papers mainly cover data science applications in the fields of tourism, new media technology, sustainable development, and governance.

However, the programme's curriculum, its intended learning outcomes, and the core topics of data science in general, also suggest research activities in fields such as data engineering (database management systems, distributed computing, cloud environments), unstructured data other than text (audio, video, images), legal and ethical aspects of big data and data science, time series as well as data science in industries other than tourism and hospitality.

Thus, the research activities of the current staff assigned to the programme would not be sufficient at the moment. The private university seems to be aware of these research gaps and is therefore planning to hire a new full professor (as well as a senior lecturer) covering some of those gaps. The position announcements included in the accreditation documents reveal that the university is seeking a professor of data science who is an established researcher in data science and artificial intelligence with a focus, among others, on one or more of the following areas: machine learning, deep learning, predictive analytics, knowledge extraction, distributed ledger technology, text mining, and multimedia mining. The private university's philosophy is to make a relatively broad call and then to ask the applicants to describe how she/he will contribute to the research of existing staff. This assures the closing of some research gaps. Even though it remains unclear which research gaps the new full professor will close, the experts acknowledge the private university's awareness of the significance of the new full professor position. The experts trust in the careful selection process and the university's medium-term ability to cover all the relevant research topics

The experts consider the criterion to be **fulfilled**.

3.7 Assessment criterion § 17 (7): Co-operations

Co-operation

The private university has envisaged co-operation projects with higher education partners and, if applicable, partners outside the higher education area in Austria and abroad which match the degree programme's profile and furthermore promote the mobility of students and staff.

Findings and evaluations:

The university maintains a network of national and international collaborations with different partners in academia, industry, and civil society on the national and international levels. A list of 39 national and international companies that signed a letter of intent to offer internships to students from the Applied Data Science BSc study programme was provided. Participation in major projects (Horizon 2020 or Federal Ministry for Transport, Innovation, and Technology (bmvit)) at the MODUL level is evidence of strong networking with partners in a wide range of fields.

Especially concerning student exchange, MODUL has several Erasmus partners and partnerships with other universities. A list of partner universities was provided to the reviewers. Nevertheless, students can study independently at foreign universities beyond the cooperation universities and have their achievements credited via a learning agreement. Before students take the opportunity to study abroad, they are advised to contact the International Office and the liaison officers responsible for the exchange programmes with the partner universities in order to obtain the necessary help. At the site visit, the rector explained the somewhat special situation at MODUL with respect to promote the mobility of students. As over 70% of the students are from abroad, they usually stay in Austria for their studies. However, for those intending to go abroad, within various partner universities students can choose.

Also during the online discussions, it was assured that in the near future the agreements with the numerous partners in research and teaching will be extended and renewed especially with regard to Data Science. Thus, the experts consider the criterion to be **fulfilled**.

4 Summary and final evaluation

(1) Development and quality assurance

The Applied Data Science study programme was developed according to a well-defined process involving all relevant stakeholders on part of the MODUL. External experts were consulted and feedback obtained. Although this could have been done more intensively, the guidelines of MODUL's Quality Management Manual provide a sufficient basis for a continuous evaluation of the study programme as well as of the labour market for the graduates thereof.

(2) Degree programme and degree programme management

Since the study programme is aligned with the profile and goals of the private university and with its development plan, it is a reasoned step for MODUL to introduce this new programme. Learning outcomes include academic, personal, and social competencies. The content and structure of the curriculum ensure that the intended learning outcomes are achieved, while using a combination of research and didactic approaches to provide research-guided teaching. The subject-specific core competencies of the programme are in line with international successful degree programmes as well as with the requirements of the Economy. Courses are mainly taught by MODUL staff, which ensures a high degree of stability for the study programme.

(3) Staff

MODUL is aware that the current staff does not yet meet all the necessary quality standards in research for the new degree programme and will therefore recruit new staff. The expertise of the existing staff with the new one in data science will provide synergy effects and interesting development opportunities. Provided that the staff will be supported in its research activities by MODUL, these synergies may ensure the attractiveness of the study programme for both students and staff.

(4) Funding

The financing plan is comprehensible in its calculation and shows a sufficient contribution margin to secure the operation of the study programme. Additionally, MODUL has a Letter of Comfort ("Patronatserklärung") in which its 90% shareholder Talents Squared Limited declares to fund MODUL such that the university can at any time fulfil its current and future obligations.

(5) Infrastructure

MODUL has quantitatively and qualitatively adequate facilities available, their use has been contractually secured. Regarding software and hardware infrastructure, students will be provided with appropriate - mostly cloud-based - tools for the study programme.

(6) Research and Development

The permanent scientific and artistic staff assigned to the degree programme is involved in the MODUL's relevant research. Their (planned) research performance is in accordance with the MODUL's approach and the data science research culture.

(7) Co-Operations

The MODUL maintains a network of numerous national and international collaborations with different partners in academia, industry, and civil society on the national and international levels. This network is to be expanded and renewed, especially with regard to data science. Thus, it offers a large pool of scientific and applied exchange possibilities. The experts **recommend the Board of the AQ Austria to accredit** the bachelor programme "Applied Data Science".

5 Documents reviewed

1. Application of the Modul University Vienna Privatuniversität from 27.07.2020 for the accreditation of the bachelor programme "Applied Data Science", to be offered in Vienna.
2. Submission of further information from 31.07.2020 prior to the site visit:
 - Updated Company Register Excerpt
3. Submission of further information from 31.07.2020 prior to the site visit:
 - Documents on the infrastructure at "Modul University Vienna"
4. Submission of further information from 27.11.2020 prior to the site visit:
 - ADS Experts questions to MUPU
 - Quality Management at MU Handbook
 - 2 CVs from staff
5. Submission of further information from 09.12.2020 following the site visit:
 - Interview sheet Bachelor 2020
 - List of companies Letters of intent
 - Financial questions BSc Applied Data Science
 - Letter of Comfort
 - Faculty teaching courses if needed
 - 2 CVs from staff
 - Foundation Programme Applied Data Science
 - Syllabus Text Mining and Media Analytics
 - Incorporation of topics in the programme
 - Relevant publications in Data Science
 - External Review Process

To the Board of the AQ Austria (Agentur für Qualitätssicherung
und Akkreditierung Austria)
Franz-Klein-Gasse 5
1190 Wien

By e-mail: office@aq.ac.at

Vienna, 19 January 2021

**Response to the expert report on the accreditation procedure for the Bachelor programme Applied
Data Science conducted in Vienna by Modul University Vienna Privatuniversität**

Dear Sir or Madam,

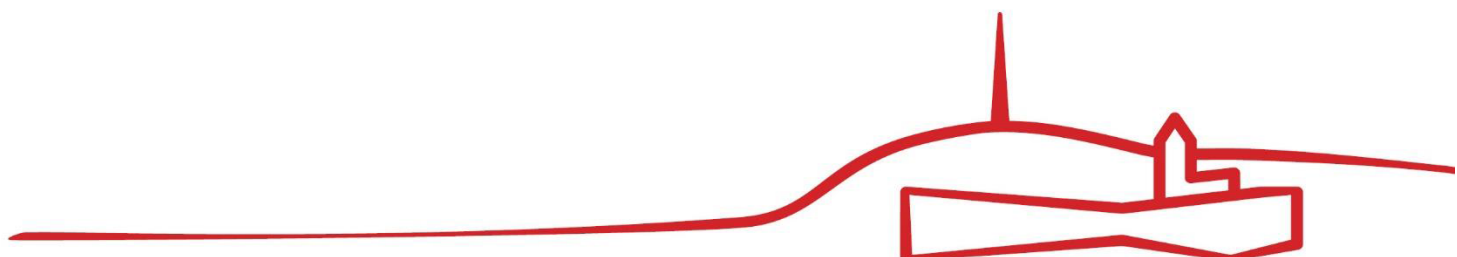
Modul University Vienna Private University would like to relay the following response in
reference to the expert report on the accreditation procedure for the Bachelor of Science in Applied
Data Science.

Modul University Vienna Private University would first like to extend immense gratitude to
the reviewers of the BSc in Applied Data Science as their assessment provided valuable feedback that
was both positive and constructive. The different recommendations of the reviewers will be carefully
considered in order to further improve the overall quality of the degree program.

Modul University Vienna Private University would like to offer a warm thank you to the
reviewers for their recommendations concerning the involvement of external academic experts and
industry partners in the evaluation and revision of the degree program. An Advisory Board in Applied
Data Science is planned to ensure the involvement of external experts in the assessment and further
development of the degree program. Several potential companies were approached and showed
interest in being members of such an Advisory Board.

In regard to the suggestion to focus more on cloud environments, computing techniques and
Big Data analytics/techniques, this topic will be discussed by the Dean of the Undergraduate School in
the next meeting of the School Conference for the undergraduate degree programs.

Modul University Vienna Private University would also like to thank the reviewers for their
influential suggestion to develop a criterion catalogue to rank applicants in a fair and reasonable way.
This will be considered in the next revision of the admissions process.



Lastly, in regard to the recommendation on the imbalance of research with teaching and administrative tasks for some faculty members, Modul University Vienna Private University would like to thank the reviewers for raising this point. While the University is aware of a certain level of imbalance for some faculty members, academic department heads will be encouraged to intensify talks with faculty to ensure that faculty with a research profile but less research outputs than others will publish more in the future.

We would like to extend our appreciation and thanks once again to the reviewers. We would kindly request a brief acknowledgement of receipt.

Sincerely,

Karl Wöber
President

