Doc. 300.1.1

Date: 8/9/2020

External Evaluation Report (Programmatic)

- **Higher Education Institution:**
  UNIVERSITY OF CYPRUS
- **Town: Nicosia**
- **School/Faculty (if applicable):** FACULTY OF PURE AND APPLIED SCIENCES (Department of Computer Science, Department of Mathematics and Statistics) & FACULTY OF ECONOMICS AND MANAGEMENT (Department of Business and Public Administration)
- **Department/ Sector:** Business and Public Administration, Computer Science, Mathematics and Statistics
- **Programme of study- Name (Duration, ECTS, Cycle)**

  In Greek:

  Μάστερ στην Επιστήμη των Δεδομένων (1 ½ έτη, 90 ECTS, Μεταπτυχιακό πρόγραμμα)

  In English:

  Magister Scientiae in Data Science (1 ½ years, 90 ECTS, Postgraduate Program)
- **Language(s) of instruction: English**
- **Programme's status**
  New programme: Yes
  Currently operating: No

The present document has been prepared within the framework of the authority and competencies of the Cyprus Agency of Quality Assurance and Accreditation in Higher Education, according to the provisions of the "Quality Assurance and Accreditation of Higher Education and the Establishment and Operation of an Agency on Related Matters Laws of 2015 to 2019" [N. 136 (I)/2015 to N. 35(I)/2019].

A. Introduction

Due to covid-19 pandemic, the whole evaluation took place remotely and online. The External Evaluation Committee (EEC) was briefed online by Ms. Alexia Pilakouri, from the Agency of Quality Assurance and Accreditation in Higher Education on September 4th 2020. Ms. Pilakouri attended the online meeting.

The online visit took place on September 7th, 2020. The day was split in five sessions: a meeting with the Vice-Rector of administrative affairs and the QA coordinator, a meeting with the head of departments involved in the programme, a meeting with faculty members with a presentation from the programme coordinator, associate professor George Pallis, a meeting with students and a meeting with administrative staff.

Members of the External Evaluation Committee were able to ask questions throughout these sessions. There was a thoughtful and informative dialogue.

During the evaluation process, the EEC had access to the 200.1 Application for Evaluation – Accreditation – New Program of Study document as well as slide presentations about the programme and the university, a virtual tour of the library and a video of the university prior to the online meeting. Additional material was provided after the online meeting about student admission requirements and the list of people involved in the preparation of the programme.

The EEC considered all aspects of the submitted documentation and the site visit discussions. The EEC would like to acknowledge the high quality of the organizational arrangements.

B. External Evaluation Committee (EEC)

Name	*Position*	*University*
Peter Filzmoser	Professor	Vienna University of Technology
Philippe Bonnet	Professor	IT University of Copenhagen
Kostas Nikolopoulos	Professor	Durham University
Panayiotis Yiangou	Student	Cyprus University of Technology

C. Guidelines on content and structure of the report

- *The external evaluation report follows the structure of assessment areas.*
- *At the beginning of each assessment area there is a box presenting:*
  (a) *sub-areas*
  (b) *standards which are relevant to the European Standards and Guidelines (ESG)*
  (c) *some questions that EEC may find useful.*
- *The questions aim at facilitating the understanding of each assessment area and at illustrating the range of topics covered by the standards.*
- *Under each assessment area, it is important to provide information regarding the compliance with the requirements of each sub-area. In particular, the following must be included:*

Findings

A short description of the situation in the Higher Education Institution (HEI), based on elements from the application for external evaluation and on findings from the onsite visit.

Strengths

A list of strengths, e.g. examples of good practices, achievements, innovative solutions etc.

Areas of improvement and recommendations

A list of problem areas to be dealt with, followed by or linked to the recommendations of how to improve the situation.

- *The EEC should state the compliance for each sub-area (Non-compliant, Partially compliant, Compliant), which must be in agreement with everything stated in the report. It is pointed out that, in the case of standards that cannot be applied due to the status of the HEI and/or of the programme of study, N/A (= Not Applicable) should be noted.*
- *The EEC should state the conclusions and final remarks regarding the programme of study as a whole.*
- ***The report may also address other issues which the EEC finds relevant.***

1. Study programme and study programme's design and development

(ESG 1.1, 1.2, 1.7, 1.8, 1.9)

Sub-areas

1.1 Policy for quality assurance
1.2 Design, approval, on-going monitoring and review
1.3 Public information
1.4 Information management

1.1 Policy for quality assurance

Standards

- *Policy for quality assurance of the programme of study:*
  - *has a formal status and is publicly available*
  - *supports the organisation of the quality assurance system through appropriate structures, regulations and processes*
  - *supports teaching, administrative staff and students to take on their responsibilities in quality assurance*
  - *ensures academic integrity and freedom and is vigilant against academic fraud*
  - *guards against intolerance of any kind or discrimination against the students or staff*
  - *supports the involvement of external stakeholders*

1.2 Design, approval, on-going monitoring and review

Standards

- *The programme of study:*
  - *is designed with overall programme objectives that are in line with the institutional strategy and have explicit intended learning outcomes*
  - *is designed by involving students and other stakeholders*
  - *benefits from external expertise*
  - *reflects the four purposes of higher education of the Council of Europe (preparation for sustainable employment, personal development, preparation for life as active citizens in democratic societies, the development and maintenance, through teaching, learning and research, of a broad, advanced knowledge base)*
  - *is designed so that it enables smooth student progression*
  - *is designed so that the exams' and assignments' content corresponds to the level of the programme and the number of ECTS*
  - *defines the expected student workload in ECTS*
  - *includes well-structured placement opportunities where appropriate*
  - *is subject to a formal institutional approval process*

- *results in a qualification that is clearly specified and communicated, and refers to the correct level of the National Qualifications Framework for Higher Education and, consequently, to the Framework for Qualifications of the European Higher Education Area*
- *is regularly monitored in the light of the latest research in the given discipline, thus ensuring that the programme is up-to-date*
- *is periodically reviewed so that it takes into account the changing needs of society, the students' workload, progression and completion, the effectiveness of procedures for assessment of students, student expectations, needs and satisfaction in relation to the programme*
- *is reviewed and revised regularly involving students and other stakeholders*

1.3 Public information

Standards

- *Regarding the programme of study, clear, accurate, up-to date and readily accessible information is published about:*
  - *selection criteria*
  - *intended learning outcomes*
  - *qualification awarded*
  - *teaching, learning and assessment procedures*
  - *pass rates*
  - *learning opportunities available to the students*
  - *graduate employment information*

1.4 Information management

Standards

- *Information for the effective management of the programme of study is collected, monitored and analysed:*
  - *key performance indicators*
  - *profile of the student population*
  - *student progression, success and drop-out rates*
  - *students' satisfaction with their programmes*
  - *learning resources and student support available*
  - *career paths of graduates*

- *Students and staff are involved in providing and analysing information and planning follow-up activities.*

You may also consider the following questions:

- *What is the procedure for quality assurance of the programme and who is involved?*
- *Who is involved in the study programme's design and development (launching, changing, internal evaluation) and what is taken into account (strategies, the needs of society, etc.)?*
- *How/to what extent are students themselves involved in the development of the content of their studies?*
- *Please evaluate a) whether the study programme remains current and consistent with developments in society (labour market, digital technologies, etc.), and b) whether the content and objectives of the study programme are in accordance with each other?*
- *Do the content and the delivery of the programme correspond to the European Qualifications Framework (EQF)?*
- *How is coherence of the study programme ensured, i.e., logical sequence and coherence of courses? How are substantial overlaps between courses avoided? How is it ensured that the teaching staff is aware of the content and outputs of their colleagues' work within the same study programme?*
- *How does the study programme support development of the learners' general competencies (including digital literacy, foreign language skills, entrepreneurship, communication and teamwork skills)?*
- *What are the scope and objectives of the foundation courses in the study programme (where appropriate)? What are the pass rates?*
- *How long does it take a student on average to graduate? Is the graduation rate for the study programme analogous to other European programmes with similar content? What is the pass rate per course/semester?*
- ***How is it ensured that the actual student workload is in accordance with the workload expressed by ECTS?***
- *What are the opportunities for international students to participate in the study programme (courses/modules taught in a foreign language)?*
- *Is information related to the programme of study publicly available?*
- *How is the HEI evaluating the success of its graduates in the labor market? What is the feedback from graduates of the study programme on their employment and/or continuation of studies?*
- *Have the results of student feedback been analysed and taken into account, and how (e.g., when planning in-service training for the teaching staff)?*
- *What are the reasons for dropping out (voluntary withdrawal)? What has been done to reduce the number of such students?*

Findings

A short description of the situation in the Higher Education Institution (HEI), based on elements from the application for external evaluation and on findings from the onsite visit.

The study programme is well designed, and it allows for a specialisation in different sub-areas by three specific tracks. The Capstone project links the students with practice, and these connections to the industry can be very

valuable once the students have finished their studies. The targeted qualification aims to follow the latest research lines. The content of the program and the three education tracks allow for a certain flexibility for students and enables adaptation with respect to the needs of industry. Lecturers are already cooperating in different projects and thus well connected. It can thus be assumed that the course contents are coherent and coordinated as well.

Students with a variety of backgrounds are admitted to the programme. Some students might require additional courses or support. There are no clear criteria to decide which additional activities are required for a given student. There are no quality assurance processes to evaluate how adequate additional activities are and to adapt them in time.

Quality assurance of the courses is mainly based on questionnaires filled in by students. Based on the feedback, teachers improve materials continuously. However, the process as described lacks transparency. Feedback from quality assurance questionnaires should be centrally collected and analysed, and a summary should be made available to staff and students. Students should get feedback to their assessments. An online procedure would ensure a more unified evaluation and more transparency.

The programme aims to combine theory with practice. The theoretical background is put into the lectures, and the practical part consists of programming with real data examples and practical training with problems and tasks in collaboration with companies. However, there is no possibility at the moment for students to complete their study with a Master thesis. This is a problem if a student is interested in a PhD.

Drop-out rates are very low at University of Cyprus. The reason for that is not obvious, but it seems to be related to a good pre-selection of the students and to strong support. Moreover, there are different evaluation measures to pass a course; this variety provides more detailed feedback to the students and the possibility to improve potential weaknesses.

The study programme is in English, which makes it easy for international students to participate.

Strengths

A list of strengths, e.g. examples of good practices, achievements, innovative solutions etc.

The study programme is very well designed.

The Capstone project links the students with practice and external stakeholders.

Lecturers are already cooperating in different projects and thus well connected.

The drop-out rate is very low.

The study programme is in English.

Areas of improvement and recommendations

A list of problem areas to be dealt with, followed by or linked to the recommendations of how to improve the situation.

The EEC recommends that feedback from student questionnaires should be centrally collected, analysed and shared with staff and students.

The EEC recommends that quality assurance processes should be precisely defined to ensure the evolution of the programme and its adequation with student and stakeholder needs.

The EEC suggests the addition of a thesis to the programme.

Please select what is appropriate for each of the following sub-areas:

Sub-area		***Non-compliant/ Partially Compliant/Compliant***
1.1	Policy for quality assurance	Partially compliant
1.2	Design, approval, on-going monitoring and review	Compliant
1.3	Public information	Compliant
1.4	Information management	Compliant

2. Student – centred learning, teaching and assessment *(ESG 1.3)*

Sub-areas

2.1 Process of teaching and learning and student-centred teaching methodology
2.2 Practical training
2.3 Student assessment

2.1 Process of teaching and learning

Standards

- *The process of teaching and learning supports students' individual and social development.*
- *The process of teaching and learning is flexible, considers different modes of delivery, where appropriate, uses a variety of pedagogical methods and facilitates the achievement of planned learning outcomes.*
- *Students are encouraged to take an active role in creating the learning process.*
- *The implementation of student-centered learning and teaching encourages a sense of autonomy in the learner, while ensuring adequate guidance and support from the teacher.*
- *Teaching methods, tools and material used in teaching are modern, effective, support the use of modern educational technologies and are regularly updated.*
- *Mutual respect within the learner-teacher relationship is promoted.*
- *The implementation of student-centred learning and teaching respects and attends to the diversity of students and their needs, enabling flexible learning paths.*
- *Appropriate procedures for dealing with students' complaints regarding the process of teaching and learning are set.*

2.2 Practical training

Standards

- *Practical and theoretical studies are interconnected.*
- *The organisation and the content of practical training, if applicable, support achievement of planned learning outcomes meet the needs of the stakeholders.*

2.3 Student assessment

Standards

- *Assessment is consistent, fairly applied to all students and carried out in accordance with the stated procedures.*
- *Assessment is appropriate, transparent, objective and supports the development of the learner.*

- *The criteria for and method of assessment, as well as criteria for marking, are published in advance.*
- *Assessment allows students to demonstrate the extent to which the intended learning outcomes have been achieved. Students are given feedback, which, if necessary, is linked to advice on the learning process.*
- *Assessment, where possible, is carried out by more than one examiner.*
- *A formal procedure for student appeals is in place.*
- *Assessors are familiar with existing testing and examination methods and receive support in developing their own skills in this field.*
- *The regulations for assessment take into account mitigating circumstances.*

You may also consider the following questions:

- *How is it monitored that the teaching staff base their teaching and assessment methods on objectives and intended learning outcomes? Provide samples of examination papers (if available).*
- *How are students' different abilities, learning needs and learning opportunities taken into consideration when conducting educational activities?*
- *How is the development of students' general competencies (including digital skills) supported in educational activities?*
- *How is it ensured that innovative teaching methods, learning environments and learning aids that support learning are diverse and used in educational activities?*
- *Is the teaching staff using new technology in order to make the teaching process more effective?*
- *How is it ensured that theory and practice are interconnected in teaching and learning?*
- *How is practical training organised (finding practical training positions, guidelines for practical training, supervision, reporting, feedback, etc.)? What role does practical training have in achieving the objectives of the study programme? What is student feedback on the content and arrangement of practical training?*
- ***Are students actively involved in research? How is student involvement in research set up?***
- *How is supervision of student research papers (seminar papers, projects, theses, etc.) organised?*
- ***Do students' assessments correspond to the European Qualifications Framework (EQF)?***
- *How are the assessment methods chosen and to what extent do students get supportive feedback on their academic progress during their studies?*
- *How is the objectivity and relevance of student assessment ensured (assessment of the degree of achievement of the intended learning outcomes)?*

Findings

A short description of the situation in the Higher Education Institution (HEI), based on elements from the application for external evaluation and on findings from the onsite visit.

The faculty members from the three departments involved in the programme have a track record of research at the highest international level. As a result, teaching is based on state-of-the-art research. The process of teaching and learning also corresponds to international standards.

Practical training is organized through the two-parts Capstone project. Through this project, students have the opportunity to be actively involved with problems defined by external stakeholders.

A key issue for this programme is that many courses are shared with existing programmes. The needs and interests of data science students must be addressed specifically. The EEC recommends that specific tutoring is introduced in those classes for data science students. This requires a dedicated budget.

For the teaching process, the faculty receives support by The University of Cyprus Center for Teaching and Learning through workshops and seminars.

Both faculty and students mentioned that the drop-out rate is low as a result of the high ratio of teachers to students and of the care taken to accommodate mitigating circumstances.

Strengths

A list of strengths, e.g. examples of good practices, achievements, innovative solutions etc.

Teaching is based on high-quality research in the three departments involved in the programme.

The central role of the capstone project favours student-centred learning.

The drop-out rate is low at University of Cyprus showing a culture of taking mitigating circumstances into account.

Areas of improvement and recommendations

A list of problem areas to be dealt with, followed by or linked to the recommendations of how to improve the situation.

The EEC recommends that a budget should be allocated upfront to fund teaching assistants tutoring data science students in the context of classes shared with existing programmes.

Please select what is appropriate for each of the following sub-areas:

Sub-area		***Non-compliant/ Partially Compliant/Compliant***
2.1	Process of teaching and learning and student-centred teaching methodology	Compliant
2.2	Practical training	Compliant
2.3	Student assessment	Compliant

3. Teaching staff *(ESG 1.5)*

Sub-areas

3.1 Teaching staff recruitment and development
3.2 Teaching staff number and status
3.3 Synergies of teaching and research

3.1 Teaching staff recruitment and development

Standards

- *Institutions ensure the competence of their teaching staff.*
- *Fair, transparent and clear processes for the recruitment and development of the teaching staff are set up.*
- *Teaching staff qualifications are adequate to achieve the objectives and planned learning outcomes of the study programme, and to ensure quality and sustainability of the teaching and learning.*
- *The teaching staff is regularly engaged in professional and teaching-skills training and development.*
- *Promotion of the teaching staff takes into account the quality of their teaching, their research activity, the development of their teaching skills and their mobility.*
- *Innovation in teaching methods and the use of new technologies is encouraged.*
- *Conditions of employment that recognise the importance of teaching are followed.*
- *Recognised visiting teaching staff participates in teaching the study programme.*

3.2 Teaching staff number and status

Standards

- *The number of the teaching staff is adequate to support the programme of study.*
- *The teaching staff status (rank, full/part time) is appropriate to offer a quality programme of study.*
- *Visiting staff number does not exceed the number of the permanent staff.*

3.3 Synergies of teaching and research

Standards

- *The teaching staff collaborate in the fields of teaching and research within the HEI and with partners outside (practitioners in their fields, employers, and staff members at other HEIs in Cyprus or abroad).*
- *Scholarly activity to strengthen the link between education and research is encouraged.*
- *The teaching staff publications are within the discipline.*

- *Teaching staff studies and publications are closely related to the programme's courses.*
- *The allocation of teaching hours compared to the time for research activity is appropriate.*

You may also consider the following questions:

- *How are the members of the teaching staff supported with regard to the development of their teaching skills? How is feedback given to members of the teaching staff regarding their teaching results and teaching skills?*
- *How is the teaching performance assessed? How does their teaching performance affect their remuneration, evaluation and/or selection?*
- *Is teaching connected with research?*
- *Does the HEI involve visiting teaching staff from other HEIs in Cyprus and abroad?*
- *What is the number, workload, qualifications and status of the teaching staff (rank, full/part timers)?*
- *Is student evaluation conducted on the teaching staff? If yes, have the results of student feedback been analysed and taken into account, and how (e.g., when planning in-service training for the teaching staff)?*

Findings

A short description of the situation in the Higher Education Institution (HEI), based on elements from the application for external evaluation and on findings from the onsite visit.

The academic faculty instructors are leading researchers, publishing in top international journals across all three disciplines (Business, Mathematics, Computer Science), highly appreciated world-wide with a lot of citations under their name – given their respective age – and with their alma mater most coming from top North American institutions including MIT, Stanford and Princeton (for their doctoral studies). Other instructors are highly competent, resulting in a useful and effective mix of theory and practice. There is a good spread in the professorial ranks involved.

There is some gender imbalance that could be alleviated over the years through respective hiring and involvement in the programme of more women.

While faculties involved in the programme have worked together, they have not published much together, especially in business journals. The synergy across the three departments could be strengthened by joint publications in leading journals or conferences in business, computer science and mathematics/statistics.

Strengths

A list of strengths, e.g. examples of good practices, achievements, innovative solutions etc.

The academic faculty instructors are leading researchers with excellent track records.

There is a good mix of faculty with diverse and synergetic interests across the three disciplines.

Areas of improvement and recommendations

A list of problem areas to be dealt with, followed by or linked to the recommendations of how to improve the situation.

The EEC recommends that gender imbalance in the teaching staff should be addressed.

The EEC suggests to strengthen synergies across the three departments through joint publications.

Please select what is appropriate for each of the following sub-areas:

Sub-area		***Non-compliant/ Partially Compliant/Compliant***
3.1	Teaching staff recruitment and development	Compliant
3.2	Teaching staff number and status	Compliant
3.3	Synergies of teaching and research	Compliant

4. Student admission, progression, recognition and certification *(ESG 1.4)*

Sub-areas

4.1 Student admission, processes and criteria
4.2 Student progression
4.3 Student recognition
4.4 Student certification

4.1 Student admission

Standards

- *Pre-defined and published regulations regarding student admission are in place.*
- *Access policies, admission processes and criteria are implemented consistently and in a transparent manner.*

4.2 Student progression

Standards

- *Pre-defined and published regulations regarding student progression are in place.*
- *Processes and tools to collect, monitor and act on information on student progression, are in place.*

4.3 Student recognition

Standards

- *Pre-defined and published regulations regarding student recognition are in place.*
- *Fair recognition of higher education qualifications, periods of study and prior learning, including the recognition of non-formal and informal learning, are essential components for ensuring the students' progress in their studies, while promoting mobility.*
- *Appropriate recognition procedures are in place that rely on:*
  - *institutional practice for recognition being in line with the principles of the Lisbon Recognition Convention*
  - *cooperation with other institutions, quality assurance agencies and the national ENIC/NARIC centre with a view to ensuring coherent recognition across the country*

4.4 Student certification

Standards

- *Pre-defined and published regulations regarding student certification are in place.*
- *Students receive certification explaining the qualification gained, including achieved learning outcomes and the context, level, content and status of the studies that were pursued and successfully completed.*

You may also consider the following questions:

- *Are the admission requirements for the study programme appropriate? How is the students' prior preparation/education assessed (including the level of international students, for example)?*
- *How is the procedure of recognition for prior learning and work experience ensured, including recognition of study results acquired at foreign higher education institutions?*
- *Is the certification of the HEI accompanied by a diploma supplement, which is in line with European and international standards?*

Findings

A short description of the situation in the Higher Education Institution (HEI), based on elements from the application for external evaluation and on findings from the onsite visit.

Student admission requirements are defined, but the EEC recommends that the admission criteria are more precisely defined. For example, a "Bachelor degree of a recognised university" does not say which Bachelor degree, and the definition of "recognised" is also not clear. Also, "Previous university education in a suitable subject" is unclear, because "suitable" may be subjective. The EEC recommends that a procedure for admission of (international) student applications with a Bachelor of 180 ECTS should be defined.

The admission committee consists of experts from all three departments involved in the programme, which ensures an appropriate level of knowledge of the admitted students. There is great enthusiasm from the responsible scientific staff and lecturers to install the program, and a lot of flexibility to mentor the students.

The programme takes care of student progression. Many lectures are accompanied by practical tasks and exercises which serve as a feedback to both students and teachers.

There are LOIs with many other institutions and companies which allow for a knowledge exchange, in particular in the frame of the Capstone project.

The programme allows for a specialisation in three disciplines. However, it is not clear if the specialisation track will be mentioned in the final certificate. This may be important information to future employers as the tracks are focusing on quite different subjects.

Strengths

A list of strengths, e.g. examples of good practices, achievements, innovative solutions etc.

The admission committee consists of experts from all three departments involved in the programme.

There is great enthusiasm from the responsible scientific staff and lecturers to install the program, and a lot of flexibility to mentor the students.

Exercises, practical training and the Capstone project require many teaching resources which are made available to the students in this programme.

Areas of improvement and recommendations

A list of problem areas to be dealt with, followed by or linked to the recommendations of how to improve the situation.

The EEC recommends that a list of suitable Bachelor studies should be defined as admission requirement, and that a list of additional mandatory subjects should be defined for those students who need them, based on their background.

The EEC recommends that applicants who are not accepted in the programme should be provided with feedback in order to guarantee a transparent procedure.

Please select what is appropriate for each of the following sub-areas:

Sub-area		***Non-compliant/ Partially Compliant/Compliant***
4.1	Student admission, processes and criteria	Partially compliant
4.2	Student progression	Compliant
4.3	Student recognition	Compliant
4.4	Student certification	Partially compliant

5. Learning resources and student support *(ESG 1.6)*

Sub-areas

5.1 Teaching and Learning resources
5.2 Physical resources
5.3 Human support resources
5.4 Student support

5.1 Teaching and Learning resources

Standards

- *Adequate and readily accessible teaching and learning resources (teaching and learning environments, materials, aids and equipment) are provided to students and support the achievement of objectives in the study programme.*
- *Adequacy of resources is ensured for changing circumstances (change in student numbers, etc.).*
- *All resources are fit for purpose.*
- *Student-centred learning and flexible modes of learning and teaching, are taken into account when allocating, planning and providing the learning resources.*

5.2 Physical resources

Standards

- *Physical resources, i.e. premises, libraries, study facilities, IT infrastructure, are adequate to support the study programme.*
- *Adequacy of resources is ensured for changing circumstances (change in student numbers, etc.).*
- *All resources are fit for purpose and students are informed about the services available to them.*

5.3 Human support resources

Standards

- *Human support resources, i.e. tutors/mentors, counsellors, other advisers, qualified administrative staff, are adequate to support the study programme.*
- *Adequacy of resources is ensured for changing circumstances (change in student numbers, etc.).*
- *All resources are fit for purpose and students are informed about the services available to them.*

5.4 Student support

Standards

- *Student support is provided covering the needs of a diverse student population, such as mature, part-time, employed and international students and students with special needs.*
- *Students are informed about the services available to them.*
- *Student-centred learning and flexible modes of learning and teaching, are taken into account when allocating, planning and providing student support.*
- *Students' mobility within and across higher education systems is encouraged and supported.*

You may also consider the following questions:

- *Evaluate the supply of teaching materials and equipment (including teaching labs, expendable materials, etc.), the condition of classrooms, adequacy of financial resources to conduct the study programme and achieve its objectives. What needs to be supplemented/ improved?*
- *What is the feedback from the teaching staff on the availability of teaching materials, classrooms, etc.?*
- *Are the resources in accordance with actual (changing) needs and contemporary requirements? How is the effectiveness of using resources ensured?*
- *What are the resource-related trends and future risks (risks arising from changing numbers of students, obsolescence of teaching equipment, etc.)? How are these trends taken into account and how are the risks mitigated?*
- *Evaluate student feedback on support services. Based on student feedback, which support services (including information flow, counselling) need further development?*
- *How is student learning within the standard period of study supported (student counselling, flexibility of the study programme, etc.)?*
- *How students' special needs are considered (different capabilities, different levels of academic preparation, special needs due to physical disabilities, etc.)?*
- *How is student mobility being supported?*

Findings

A short description of the situation in the Higher Education Institution (HEI), based on elements from the application for external evaluation and on findings from the onsite visit.

The overall resources and support of the studies are well designed and of very high quality.

The support levels and provision of the very successful MBA programme are a model for this new cross-department MSc programme. In order to replicate the success of the MBA, the EEC recommends that administrative support is provided to this new programme from the start.

The EEC recommends that there should be support for tutorials so as to support the MSc in the Data science cohort when attending lectures jointly with other MSc cohorts from other programmes. There should be a budget for this support (as mentioned in Section 2).

The programme involves three departments with different cultures and regulations. The EEC recommends that the programme directors manage the inevitable cross-department discrepancies so that this diversity enriches the programme and does not result in an incoherent experience for students.

Strengths

A list of strengths, e.g. examples of good practices, achievements, innovative solutions etc.

The MBA programme is a successful model for this new programme.

Areas of improvement and recommendations

A list of problem areas to be dealt with, followed by or linked to the recommendations of how to improve the situation.

The EEC recommends that there is a budget for administrative support for this new programme from the start.

The EEC recommends that the programme directors manage cross-department discrepancies to guarantee a coherent experience for students.

Please select what is appropriate for each of the following sub-areas:

Sub-area		***Non-compliant/ Partially Compliant/Compliant***
5.1	Teaching and Learning resources	Compliant
5.2	Physical resources	Compliant
5.3	Human support resources	Compliant
5.4	Student support	Compliant

6. Additional for distance learning programmes *(ALL ESG)*

Sub-areas

6.1 Distance learning philosophy and methodology
6.2 Distance learning material at the appropriate level according to EQF
6.3 Interaction plan and Interactive weekly activities
6.4 Study guides

6.1 Distance learning philosophy and methodology

Standards

- *The distance learning methodology is appropriate for the particular programme of study.*
- *Feedback processes for students in relation to written assignments are set.*
- *A complete assessment framework is designed, focusing on distance learning methodology, including clearly defined evaluation criteria for student assignments and the final examination.*
- *Expected teleconferences for presentations, discussion and question-answer sessions, and guidance are set.*

6.2 Distance learning material at the appropriate level according to EQF

Standards

- *Twelve weekly interactive activities per each course are set.*
- *The distance learning material and activities take advantage of the capabilities offered by the virtual and audio-visual environment and the following are applied:*
  - *Simulations in virtual environments*
  - *Problem solving scenarios*
  - *Interactive learning and formative assessment games*
  - *Interactive weekly activities with image, sound and unlimited possibilities for reality reconstruction and further processing based on hypotheses*
  - *They have the ability to transfer students to real-life situations, make decisions, and study the consequences of their decisions*
  - *They help in building skills both in experiences and attitudes like in real life and also in experiencing - not just memorizing knowledge*
- *A pedagogical planning unit for distance learning, which is responsible for the support of the distance learning unit and addresses the requirements for study materials, interactive activities and formative assessment in accordance to international standards, is established.*

6.3 Interaction plan and Interactive weekly activities

Standards

- *A specific plan is developed to safeguard and assess the interaction:*
  - *among students*
  - *between students and teaching staff*
  - *between students and study guides/material of study*
- *Training, guidance and support are provided to the students and teaching staff focusing on interaction and the specificities of distance learning.*

6.4 Study guides

Standards

- *A study guide for each course, fully aligned with distance learning philosophy and methodology and the need for student interaction with the material is developed. The study guide should include, for each course week / module, the following:*
  - *Clearly defined objectives and expected learning outcomes of the programme, of the modules and activities in an organised and coherent manner*
  - *Presentation of course material, and students' activities on a weekly basis, in a variety of ways and means (e.g. printed material, electronic material, teleconferencing, multimedia)*
  - *Weekly outline of set activities and exercises and clear instructions for creating posts, discussion, and feedback*
  - *Self-assessment exercises and self-correction guide*
  - *Bibliographic references and suggestions for further study*
  - *Number of assignments/papers and their topics, along with instructions and additional study material*
  - *Synopsis*

- *Study guides, material and activities are appropriate for the level of the programme according to the EQF.*

You may also consider the following questions:

- *Is the nature of the programme compatible with distance learning delivery?*
- *How do the programme, the material, the facilities, and the guidelines safeguard the interaction between students, students and teaching staff, students and the material?*
- *How many students upload their work and discuss it in the platform during the semester?*
- *Are the academics qualified to teach in the distance learning programme?*

Findings

A short description of the situation in the Higher Education Institution (HEI), based on elements from the application for external evaluation and on findings from the onsite visit.

Not applicable.

Strengths

A list of strengths, e.g. examples of good practices, achievements, innovative solutions etc.

Not applicable.

Areas of improvement and recommendations

A list of problem areas to be dealt with, followed by or linked to the recommendations of how to improve the situation.

Not applicable.

Please select what is appropriate for each of the following sub-areas:

Sub-area		***Non-compliant/ Partially Compliant/Compliant***
6.1	Distance learning philosophy and methodology	Not applicable
6.2	Distance learning material at the appropriate level according to EQF	Not applicable
6.3	Interaction plan and Interactive weekly activities	Not applicable
6.4	Study guides	Not applicable

7. Additional for doctoral programmes *(ALL ESG)*

Sub-areas

7.1 Selection criteria and requirements
7.2 Proposal and dissertation
7.3 Supervision and committees

7.1 Selection criteria and requirements

Standards

- *Specific criteria that the potential students need to meet for admission in the programme, as well as how the selection procedures are made, are defined.*
- *The following requirements of the doctoral degree programme are analysed and published:*
  - *the stages of completion*
  - *the minimum and maximum time of completing the programme*
  - *the examinations*
  - *the procedures for supporting and accepting the student's proposal*
  - *the criteria for obtaining the Ph.D. degree*

7.2 Proposal and dissertation

Standards

- *Specific and clear guidelines for the writing of the proposal and the dissertation are set regarding:*
  - *the chapters that are contained*
  - *the system used for the presentation of each chapter, sub-chapters and bibliography*
  - *the minimum word limit*
  - *the binding, the cover page and the prologue pages, including the pages supporting the authenticity, originality and importance of the dissertation, as well as the reference to the committee for the final evaluation*
- *There is a plagiarism check system. Information is provided on the detection of plagiarism and the consequences in case of such misconduct.*
- *The process of submitting the dissertation to the university library is set.*

7.3 Supervision and committees

Standards

- *The composition, the procedure and the criteria for the formation of the advisory committee (to whom the doctoral student submits the research proposal) are determined.*
- *The composition, the procedure and the criteria for the formation of the examining committee (to whom the doctoral student defends his/her dissertation), are determined.*
- *The duties of the supervisor-chairperson and the other members of the advisory committee towards the student are determined and include:*
  - *regular meetings*
  - *reports per semester and feedback from supervisors*

- *support for writing research papers*
- *participation in conferences*

- *The number of doctoral students that each chairperson supervises at the same time are determined.*

You may also consider the following questions:

- *How is the scientific quality of the PhD thesis ensured?*
- *Is there a link between the doctoral programmes of study and the society? What is the value of the obtained degree outside academia and in the labour market?*
- *Can you please provide us with some dissertation samples?*

Findings

A short description of the situation in the Higher Education Institution (HEI), based on elements from the application for external evaluation and on findings from the onsite visit.

Not applicable.

Strengths

A list of strengths, e.g. examples of good practices, achievements, innovative solutions etc.

Not applicable.

Areas of improvement and recommendations

A list of problem areas to be dealt with, followed by or linked to the recommendations of how to improve the situation.

Not applicable.

Please select what is appropriate for each of the following sub-areas:

Sub-area		***Non-compliant/ Partially Compliant/Compliant***
7.1	Selection criteria and requirements	Not applicable
7.2	Proposal and dissertation	Not applicable
7.3	Supervision and committees	Not applicable

8. Additional for joint programmes *(ALL ESG)*

Sub-areas

8.1 Legal framework and cooperation agreement
8.2 The joint programme

8.1 Legal framework and cooperation agreement

Standards

- *The joint programme is offered in accordance with legal frameworks of the relevant national higher education systems.*
- *The terms and conditions of the joint programme are laid down in a cooperation agreement. The agreement in particular covers the following issues:*
  - *Denomination of the degree(s) awarded in the programme*
  - *Coordination and responsibilities of the partners involved regarding management and financial organisation, including funding, sharing of costs and income, resources for mobility of staff and students*
  - *Admission and selection procedures for students*
  - *Mobility of students and teaching staff*
  - *Examination regulations, student assessment methods, recognition of credits and degree awarding procedures*
  - *Handling of different semester periods, if existent*

8.2 The joint programme

Standards

- *The partner universities apply joint internal quality assurance processes.*
- *The joint programme is offered jointly, involving all cooperating universities in the design, delivery and further development of the programme.*
- *Aims and learning outcomes are clearly stated, including a joint syllabus, language policy, as well as an account of the intended added value of the programme.*
- *Study counselling and mobility plans are efficient and take into account the needs of different kinds of students.*

You may also consider the following questions:

- *Does the joint study programme conform to the requirements of a study programme offered at the specific level?*
- *Is there a system that assures the quality of joint provision and guarantees that the aims of the programme are met?*
- *Do the mechanisms for ensuring the quality of the joint study programme take into consideration the European Standards and Guidelines (ESG)? Are they adopted by all the universities involved?*
- *Is the division of responsibilities in ensuring quality clearly defined among the partner universities?*
- *Is relevant information about the programme, e.g. admission requirements and procedures, course catalogue, examination and assessment procedures, well documented and published by taking into account the specific needs of students?*
- *What is the added value of the programme of study?*
- *Is there a sustainable funding strategy among the partner universities? Explain.*

Findings

A short description of the situation in the Higher Education Institution (HEI), based on elements from the application for external evaluation and on findings from the onsite visit.

Not applicable.

Strengths

A list of strengths, e.g. examples of good practices, achievements, innovative solutions etc.

Not applicable.

Areas of improvement and recommendations

A list of problem areas to be dealt with, followed by or linked to the recommendations of how to improve the situation.

Not applicable.

Please select what is appropriate for each of the following sub-areas:

Sub-area		***Non-compliant/ Partially Compliant/Compliant***
8.1	Legal framework and cooperation agreement	Not applicable
8.2	The joint programme	Not applicable

D. Conclusions and final remarks

Please provide constructive conclusions and final remarks which may form the basis upon which improvements of the quality of the programme of study under review may be achieved, with emphasis on the correspondence with the EQF.

Overall, the EEC finds the proposed programme compliant. The programme is timely and relevant. Its objectives and intended learning outcomes are aligned. The programme design is sound and well prepared.

The teaching staff includes leading scientists in computer science, mathematics/statistics and business administration. Teaching is connected with high-quality research. Teaching performance is assessed via questionnaires completed by the students.

The university resources are adequate to support learning and the design and implementation of teaching.

The university provides high quality support and services to students, with adequate help to students that have personal difficulties. Students participate in internal evaluation mechanisms, but they should also have the opportunity to see the effects of their feedback.

The EEC recommends that a budget should be allocated upfront to fund administrative support as well as teaching assistants tutoring data science students in the context of classes shared with existing programmes.

The EEC recommends that a list of suitable Bachelor studies should be defined as admission requirement, and that a list of additional mandatory subjects should be defined for those students who need them, based on their background.

Furthermore, the EEC recommends that:

- feedback from student questionnaires should be centrally collected, analysed and shared with staff and students.

- quality assurance processes should be precisely defined to ensure the evolution of the programme and its adequation with student and stakeholder needs.

- a thesis can be added to the programme.

- applicants who are not accepted in the programme should be provided with feedback in order to guarantee a transparent procedure.

- the programme directors manage cross-department discrepancies to guarantee a coherent experience for students.

E. Signatures of the EEC

Name	*Position*	*University*
Peter Filzmoser	Professor	Vienna University of Technology
Philippe Bonnet	Professor	IT University of Copenhagen
Kostas Nikolopoulos	Professor	Durham University
Panayiotis Yiangou	Student	Cyprus University of Technology

Date: 8/9/2020