ENQA EUROPEAN ASSOCIATION FOR QUALITY ASSURANCE IN HIGHER EDUCATION

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ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ
THE CYPRUS AGENCY OF QUALITY ASSURANCE AND ACCREDITATION IN HIGHER EDUCATION

Doc. 300.1.2

Date: 02/10/2019

Higher Education Institution's response

- **Higher education institution:**

  University of Nicosia

- **Town:** Nicosia

- **Programme of study (Name, ECTS, duration, cycle)**

  In Greek:

  Επιστήμη Δεδομένων (4 έτη, 240 ECTS, Πτυχίο)

  In English:

  Data Science (4 years, 240 ECTS, Bachelor of Science)

- **Language of instruction:** English

- **Programme's status**
  New programme: X

ΚΥΠΡΙΑΚΗ ΔΗΜΟΚΡΑΤΙΑ
REPUBLIC OF CYPRUS

A. Guidelines on content and structure of the report

- *The Higher Education Institution (HEI) based on the External Evaluation Committee's (EEC's) evaluation report (Doc.300.1.1) must justify whether actions have been taken in improving the quality of the programme of study in each assessment area.*

- *In particular, under each assessment area, the HEI must respond on, without changing the format of the report:*

    - *the findings, strengths, areas of improvement and recommendations of the EEC*
    - *the deficiencies noted under the quality indicators (criteria)*
    - *the conclusions and final remarks noted by the EEC*

- *The HEI's response must follow below the EEC's comments, which must be copied from the external evaluation report (Doc. 300.1.1).*

- *In case of annexes, those should be attached and sent on a separate document.*

0. Introduction

We would like to thank the External Evaluation Committee (EEC) for their professional and thorough work during the on-site evaluation of the BSc Data Science programme on July 4th, 2019. We would also like to express our appreciation for the collegial and constructive approach with which they conducted their evaluation. All full-time faculty teaching in the programme were present during the evaluation. Most of the part-time faculty were also present and the committee had separate meetings with them, as well as with two current students of the Department of Computer Science

We would like to note that the report of the committee is ***extremely positive*** with all sections of quality indicators being rated as, "*Fully Compliant*" or "*Substantially Compliant*". More specifically, 2 out of 5 sections of quality indicators were rated as "*Fully Compliant*" and 3 out of 5 were rated as "*Substantially Compliant*". The overall extremely positive assessment is also in line with the committee's comments regarding all aspects of the program: timing and relevance, objectives and learning outcomes, program design, teaching staff, university resources, student support and services. More specifically, the EEC states in its conclusion, amongst other: ***"The programme of study is timely and relevant. Its objectives and intended learning outcomes are aligned. The programme design is sound, informed by research and based on appropriate preparatory work."*** and that ***"The teaching staff includes experienced scientists in the data science domain with qualifications that meet the objectives of the programme, and collaborations with both industry and academia.". "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 (e.g., due to the economic crisis)."***

We do appreciate the committee's recommendations for improvement, which will enhance the quality of our program and we will be addressing those in the corresponding section of this response.

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1. Study programme and study programme's design and development
(*ESG 1.1, 1.2, 1.8, 1.9*)

Positive comments made by the EEC:

- *"The programme is timely, relevant and well-designed."*

- *"The programme design is sound, informed by research and based on appropriate preparatory work. It was designed by a committee of academics with consultations with industry and international institutions"*

- *"The programme management and teaching staff are of high quality."*

- *"The support provided to students whose mathematics skills need improvement to follow the program is excellent."*

Constructive feedback by the EEC:

1.1: *"Students should learn how to combine their computer science and mathematics skills with domain knowledge in the context of a project, before the final year project. A recommendation could be to make a "project in data science" course mandatory in the second year of study."*

Response/Action: A course COMP-248 "Project in Data Science" of 6 ECTS has now been added as a mandatory course in the second year of study. This course will allow students to exploit and extend the knowledge and skills obtained in their studies (so far) in a domain of their choice. This includes, but is not limited to, Business, Medicine and Biology, Engineering, and Education. To retain the program total of 240 ECTS, the minimum ECTS from the Major Electives has decreased by 6 ECTS. The updated program structure is shown in Table 1 in Annex 1 of this document. The updated program pathway is shown in Annex 2 of this document.

It should also be noted that we have renamed the course COMP-449 "Practice and Experience in Data Science" to be in line with the specifications of the Industry Liaison Offices that operate in Republic of Cyprus. The new name for the COMP-499 course is "Industry Placement in Data Science" (shown in Table 1, Annex 1).

1.2: *"We suggest to move COMP-370 Algorithms course earlier in the curriculum because it is a foundation for a major part of the programme".*

Response/Action: COMP-370 Algorithms course has now moved from year 3 (6th semester) to year 2 (4th semester). As a result COMP-242 Data Privacy and Ethics as well as COMP-340 Big Data have now moved to 5th and 6th semester respectively, to accommodate the recommended COMP-370 Algorithms semester change. The updated semester breakdown is shown in Annex 3 of this document.

1.3: *"We strongly suggest that the department of computer science, or the school of engineering, takes ownership of the technical writing course (now BADM-332). We recommend that bridges are established between the storytelling aspects of the data visualization course and the technical writing course."*

Response/Action: We agree with the recommendation and we address it with the suggested change: There will now be a specific section of BADM-332 Technical Writing offered only to the School of Science and Engineering students (which includes the Data Science students). The assessment will be customized towards the Science and Engineering disciplines. This customization will allow COMP-342: Data Visualization to capitalize on the storytelling aspects of BADM-332 and provide a more in depth introduction to communicating data analysis results to intended audiences.

1.4: *"The fact that courses between computer science and data science BSc programmes are shared poses a problem in terms of how these courses can be kept up to date, without too much overhead. We recommend that UNIC takes maximum advantage of the existing rules and continuously updates as many courses as possible, with a special focus on the shared courses."*

Response/Action: All courses offered by the Department of Computer Science are constantly updated to reflect current and emerging trends, to ensure they are always up-to-date and relevant. Updates to the courses are implemented to the extent that is in compliance with the CYQAA. Having said that, we would also like to clarify that the emphasis in our course syllabi is on algorithms, techniques, models and not on specific software which continuously changes in a constantly evolving ICT field. This provides our faculty with the flexibility to update their courses by accompanying the theoretical data science foundation with current software tools. Hence, we minimize the risk of our courses becoming outdated while remaining in compliance with the CYQAA guidelines.

2. Teaching, learning and student assessment (*ESG 1.3*)

Positive comments made by the EEC:

- *"The programme is designed according to international standards of teaching and learning with respect to pedagogical methods, modes of delivery, and variety of learning outcomes."*

- *"The process of teaching and learning takes into consideration the specific students' needs."*

- *"Teaching methods, tools and material used in teaching are modern, effective, and support the use of modern educational technologies."*

- *"The programme presents a balanced mixture of practical and theoretical teaching hours."*

- *"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."*

- *"The programme design is sound, informed by research and based on appropriate preparatory work. It was designed by a committee of academics with consultations with industry and international institutions"*

- *"The programme management and teaching staff are of high quality."*

- *"The support provided to students whose mathematics skills need improvement to follow the program is excellent."*

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Constructive feedback by the EEC:

2.1: *"It was not clear how students are encouraged to take an active role in creating the learning process."*

Response/Action: We would like to clarify that students take an active role in all academic decisions including the development of the learning process. This is achieved through the following student memberships to a number of academic bodies: a) The Department of Computer Science Council has three elected student representatives who are voting members to all Departmental decisions, including the proposal of the introduction of new programs, structure (program pathway) design, course descriptions (syllabi) and learning outcomes etc., b) The three Department Council representatives are also chairing the Department's "Student Wellness Committee" which is responsible for providing feedback to the curriculum and liaising with the rest of the students, c) There is one student member in the Internal Team of Reviewers who evaluate the program 2 years after its accreditation, as per the University regulations regarding the Internal Program Evaluation Process (IPEP), d) There is one student representative who is a member of the Department Quality Assurance Committee. Finally, e) the Computer Science Department holds yearly Board of Studies meetings where all Department of Computer Science students are invited to provide feedback to faculty and raise any concerns regarding their programs of study.

Moreover, it should be noted that, based on University guidelines, courses are structured in such a way so as to ensure interactivity between (a) students and faculty, (b) students and course materials, and (c) students and their classmates, and to encourage students' active participation in the learning process. This is achieved through the use of various activities, assessments and communication tools, collaborative projects etc. The effective use of these enhances students' performance and has a positive impact on the successful delivery of the course.

2. 2: *"It is important that students' different abilities in computer programming are considered seriously through some preparatory workshops."*

Response/Action: We would like to clarify that the first programming course (COMP-111 Programming Principles I), which is compulsory for the Data Science program, assumes no prior knowledge of programming. Hence the preparatory workshop is not needed.

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2. 3: *"It is not clear whether people outside of UNIC are involved in the assessment of learning outcomes, especially during the defense of the final project thesis. The EEC highly recommends it."*

Response/Action: Regarding the involvement of people outside of UNIC in the assessment of learning outcomes, we would like to clarify that there is an Internal Program Evaluation Process (IPEP) which includes an External Team of Reviewers. The IPEP is initiated 2 years after the accreditation of the programme and the External Team of Reviewers include one faculty member from another University who is an expert in the programme area and one industry expert.

Regarding the inclusion of the external examiners in the defense of the final year project thesis of the undergraduate degree, as with most Universities, this is not the common practice.

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3. Teaching Staff (*ESG 1.5*)

Positive comments made by the EEC:

- *"The teaching staff includes experienced scientists in the data science domain, showing a fair and clear method regarding the recruiting process."*

- *"The qualifications of the staff clearly meet the objectives of the programme and its planned learning outcomes."*

- *"The teaching staff has established collaborations with both industry and academia within Cyprus and worldwide."*

- *"The teaching staff is engaged in professional and teaching-skills training, especially on how to use the distance learning tools."*

- *"There exist regular development discussions for assessing the teaching and research quality of the teaching and research quality."*

- *"It is nice to see that teaching is connected with research as this showed by the publications produced in collaboration with students in the programmes the teaching staff participate currently."*

- *"The teaching performance is assessed via feedback questionnaires completed by the students of the programme. Teaching performance, as well as research performance, affect teachers' evaluation. Specialized seminars are organized for improving professors' teaching skills."*

- *"The teaching team is nicely built: both genders, both young and senior faculty at different ranks. Professors are well-qualified. The teaching team includes visiting teaching staff from other institutions and companies."*

Constructive feedback by the EEC:

3.1: *"To increase the visibility and internationalization of the programme, recognized visiting professors can be invited for giving lectures of specialized topics."*

Response/Action: The Department has strong collaboration links with renowned professors in Data Science worldwide and plans to utilize these collaborations for invited lectures on

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specialized topics, during the Computer Science Seminar Series which the Department runs every Spring.

3. 2: *"If the new programme is accepted, and given the current workload of the teachers, they should get rid of part of their existing teaching load, so as to have a reasonable amount of teaching hours and available time for research."*

Response/Action: There have already been two recent hirings of Data Science professors who are currently utilized by the department to teach non-specialized, basic Computer Science courses. When the new program is accepted, we plan to remove these general CS courses from the specialized faculty so that they will devote their normal load to Data Science courses. This will also be the case with any other Data Science teaching faculty on the program. New hirings will be necessary in order to undertake the general CS courses.

4. Students (*ESG 1.4, 1.6, 1.7*)

Positive comments made by the EEC:

- *"The teaching staff is easily accessible by the students."*

- *"All the regulations regarding student progression, recognition and certification are in place."*

- *"There are adequate welfare mechanisms to support the students through KESY."*

- *"The students have the opportunity to provide feedback to the university and to participate in the internal evaluation procedures."*

- *"The adequate support is provided to students with special needs or disabilities."*

Constructive feedback by the EEC:

4.1: *"The EEC is concerned regarding a potential overuse of the special academic admission."*

Response/Action: By definition, the special academic admission is used in a few special cases. We appreciate the concern of the EEC and we want to assure the EEC that the follow-up procedures (monitoring) safeguard the smooth progression to the next stage. These procedures include less workload for the students (i.e. fewer number of courses) and continuous monitoring of the student performance throughout the probation period.

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5. Resources (*ESG 1.6*)

Positive comments made by the EEC:

- *"The University welfare system for undergraduate and postgraduate students seems to be a very useful and complete service to support students during their learning. In this context the Math and Writing labs are considered good practices that may help students with these two difficult areas."*

- *"The EEC believes that the university has adequate mechanisms to provide the necessary assistance to students with disabilities."*

- *"As most of the resources are digital and are available from the Moodle platform, the learning resources are mostly available to students 24x7."*

- *"The PSU support is considered a best practice, since it may be really powerful in the design, creation, implementation and evaluation of courses."*

Constructive feedback by the EEC:

5.1: *"*The equipment in the laboratories is enough for the purposes of the program, but an upgrade would be ideal to improve the students' experience.*"*

Response/Action: We acknowledge the Committee's assessment that the equipment in the laboratories is "enough for the purposes of the program". We would also like to add that the Department is updating both software and infrastructure on a yearly basis. The budget requested for 2019-2020 already includes items that will be dedicated to our Data Science programs and research. The relevant budget request, which was already approved, is shown in Annex 4.

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

Not applicable.

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

Not applicable.

Not applicable.

B. Conclusions and final remarks

The EEC's conclusion and final remark paragraph is as follows:

"Overall, the proposed Data Science Bachelor of Science Programme of UNIC is substantially compliant. The programme of study is timely and relevant. Its objectives and intended learning outcomes are aligned. The programme design is sound, informed by research and based on appropriate preparatory work.

The teaching staff includes experienced scientists in computer science and mathematics, with experience in topics relevant to data science. Teaching is connected with research, and teaching performance is assessed via questionnaires completed by the students. The teaching team includes a good balance of genders and seniority of teachers. The overlap between the data science and computer science programmes is appropriate.

The university resources are adequate to support learning and the design and implementation of teaching. The classrooms and laboratories are well dimensioned and sized, the technological infrastructure is very good, the library provides a good amount or resources, both physically and virtually, and they have the tools for supporting teaching and learning, e.g., Moodle, Webex, Planet E-stream.

The university provides high quality support and services to students, with adequate help to students that have personal difficulties (e.g., due to the economic crisis). Student participate in internal evaluation mechanisms, but they should also have the opportunity to see the effects of their feedback. For the admissions requirements, there is a risk that special academic admission may be overused and negatively impact the programme."

We welcome the EEC's extremely positive conclusions on all aspects of the proposed BSc Data Science program: timing and relevance, objectives and learning outcomes, program design, teaching staff, university resources, student support and services. The final sentence of the conclusions above states a concern regarding admission requirements which has been addressed in point 4.1 above.

C. Higher Education Institution academic representatives

Name	*Position*	*Signature*
Prof. Athena Stassopoulou	Program Coordinator Head of Computer Science	
Dr. George Gregoriou	Dean School of Sciences and Engineering	
Prof. Edna Yamasaki Patrikiou	Vice-Rector Academic Affairs	
Prof. Philippos Pouyioutas	Rector	

Date: 02/10/2019 ……………………….