

Doc. 300.1.2

Date: 1/08/2024

Higher Education Institution's Response

- **Higher Education Institution:**

Cyprus University of Technology

- **Town: Limassol**

- **Programme of study**

BSc Data Science (4 years, 240 ECTS, BSc)

In Greek:

Πτυχίο στην Επιστήμη Δεδομένων με ειδίκευση 1) Επιστήμη Δεδομένων, 2) Οικονομικά και Διοίκηση (4 ακαδημαϊκά έτη, 240 ECTS, Πτυχίο (BSc))

In English:

Data Science with specialisations: 1) Data Science, 2) Economics and Business

- **Language(s) of instruction:** Greek

- **Programme's status:** New

- **Concentrations (if any):**

In Greek: Concentrations

In English: Concentrations



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 2021 [L.136(I)/2015 – L.132(I)/2021].

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 or 300.1.1/1 or 300.1.1/2 or 300.1.1/3 or 300.1.1/4) must justify whether actions have been taken in improving the quality of the programme of study in each assessment area. The answers' documentation should be brief and accurate and supported by the relevant documentation. Referral to annexes should be made only when necessary.*
- *In particular, under each assessment area and by using the 2nd column of each table, the HEI must respond on the following:*
 - *the areas of improvement and recommendations of the EEC*
 - *the conclusions and final remarks noted by the EEC*
- *The institution should respond to the EEC comments, in the designated area next each comment. The comments of the EEC should be copied from the EEC report **without any interference** in the content.*
- *In case of annexes, those should be attached and sent on separate document(s). Each document should be in *.pdf format and named as annex1, annex2, etc.*

1. Study programme and study programme's design and development (ESG 1.1, 1.2, 1.7, 1.8, 1.9)

Areas of improvement and recommendations by EEC	Actions Taken by the Institution	For Official Use ONLY
Alignment of the programme portfolio with industry needs is missing. For example, courses in Natural Language Processing, Generative and ethical AI and LLM.	Recent updates to the curriculum include the addition of courses in Natural Language Processing, Artificial Intelligence, and LLM. These enhancements ensure the programme aligns with current industry needs and technological trends. As discussed during the on-site visit, the program's content will undergo regular evaluation to remain relevant, with necessary adjustments made in response to technological advances and industry demands. An Advisory Board has been appointed to oversee and guide this continuous improvement process, with further details on its structure provided below.	Choose level of compliance:
There is no clear demarcation of the competency profiles of graduates from the two concentrations; e.g., which industries these graduates will be employed in. It would be beneficial for the programme to clearly define these profiles for the two concentrations so that they can target specific job profiles in the industry.	The Department is currently preparing detailed materials, including program content, course information, and the scope of the concentrations, which will be published on the University website and shared with prospective students through the <i>Odigos Spoudwn – Pancyprries</i>. This publicly available information will clearly delineate the competency profiles for the two concentrations, ensuring that students are fully informed of their options when applying for the Pancyprrian exams and choosing our degree in Data Science. The EEC's feedback is acknowledged, and steps are being taken to address this concern. The information will be made available soon, immediately following the program's accreditation and well before it is included in the Pancyprrian exams system for future students. The Faculty has defined the competency profiles as follows: <u>Data Science direction:</u> Graduates are expected to focus purely on data science and will develop advanced quantitative skills for data analytics and solid background on computational statistics data analysis. They are also expected to have all the necessary skills for statistical and quantitatively demanding roles. Some options for employment, among others, are data analyst, data engineer, BI analyst, ML engineer, database administrator, market research analyst and risk management analyst. <u>Data Science in Economics and Business:</u>	Choose level of compliance:

	Graduates would fit the profile of an economics graduate and be fully qualified as economists for business analytics and they can be employed in various organisations, including roles in advisory services and risk management positions. Furthermore, graduates would fit in positions in policy making organisations, economic forecasting, policy analysis and market analysis, financial modelling, social media analysis and data analyst.	
The EEC identified a gap in the program's process for collecting regular feedback from industry experts and/or professional bodies. Active involvement of industry and other stakeholders in the design and implementation of the programme is recommended.	The course program and structure for both the Data Science and Data Science in Economics and Business concentrations were developed in close consultation with a diverse group of academics and international stakeholders. This group includes respected figures such as Prof. George Roussos (Birkbeck, University of London, UK), Prof. George Kapetanios (King's College London, UK), Prof. Ana Colubi (King's College London, UK), Prof. Christakis Charalambous (University of Cyprus), Prof. Peter Winker (University of Giessen, Germany), Prof. Berc Rustem (Imperial College, London, UK), Dr Costa Bekas (Citadel Securities, Switzerland), Dr Michalis Kapsos (Qube Research & Technologies, London, UK), and Dr Stavros Siokos (Astarte Capital Partners LLP, London, UK), who collectively bring extensive academic and industry experience. These individuals serve on the Academic and Stakeholder's Advisory Boards, providing ongoing guidance on course development. It is acknowledged that none of the Advisory Board members were available to meet with the EEC during the on-site visit. However, their active involvement in shaping the program ensures that industry perspectives are continuously integrated into the design and implementation of the curriculum. Going forward, the program will seek to enhance regular feedback mechanisms from industry experts and professional bodies to further align with industry needs and standards.	Choose level of compliance:
The rigid structure (i.e., with fewer electives) of the programme leaves students little flexibility to choose their desired profiles. For example, Computer Science profile, Data Science, or more business oriented	The Department has carefully considered the EEC's recommendation and has enriched the curriculum with additional elective courses. New electives have been added, including nine elective courses focused on computer science, and business-oriented modules. This more flexible structure will provide students with the ability to tailor their education to their desired profiles, while also allowing for the dynamic updating of the curriculum in response to the rapidly changing field of data science. The revised course distribution per semester is attached.	Choose level of compliance:

with data science skills. We recommend the programme be redesigned to accommodate a more flexible core and elective structure. The core (maybe the first three semesters) will provide a solid foundation in mathematics, statistics, economics, and finance, which business analytics students need. The remaining semesters of the programme may offer more electives so that the students will have the flexibility to choose their desired profiles. This will also allow the dynamic updating of the programme in this constantly changing field.		
The BSc thesis is considered a strong point in the structure and delivery of the program, along with the required internship. The thesis/final project in data science is suggested to be mandatory.	The Department appreciates the recommendation and acknowledges the value of making the thesis or final project in data science a mandatory component of the program. This suggestion will be thoroughly reviewed in upcoming Departmental meetings. Currently, the BSc thesis cannot be made mandatory due to certain constraints. Students need to meet a minimum average grade to qualify for the thesis, and the limited number of permanent faculty members restricts the capacity to supervise all eligible students. However, as the Department expands and additional faculty are appointed, the Council will reassess the feasibility of making the	Choose level of compliance:

	thesis mandatory and potentially offering it to a larger number of students in the future.	
To ensure continuous improvement, the EEC recommends a periodic program review incorporating feedback from academic staff, students, local industry experts, and professional bodies.	The Coordination Committee of the program has engaged with external collaborators, including academics and industry stakeholders, who have agreed to serve on the Advisory Board. This board will play a crucial role in ensuring continuous improvement by incorporating feedback from academic staff, students, local industry experts, and professional bodies. The composition of the various boards is outlined below. ----- Academic advisory board ----- Ana Colubi, Co-Editor-in-Chief of Computational Statistics & Data Analysis Journal, Visiting Professor in Statistics, Department of Mathematics, King's College London, UK, and University of Giessen, Germany Christakis Charalambous, Professor Emeritus of Management Science, University of Cyprus Armelle Guillou, Professor in Statistics, Strasbourg University, France George Roussos, Professor of Pervasive Computing, Head of School - School of Computing and Mathematical Sciences, Birkbeck University of London, UK George Kapetanios is Professor of Finance and Econometrics and Head of Department, Banking & Finance at King's Business School, King's College London, UK Giampiero Marra, Professor of Statistics at the Department of Statistical Science at University College London, UK Berc Rustem, Emeritus Professor of Computational Methods in Operations Research, Department of Computing, Imperial College, London, UK Jane-Ling Wang, Distinguished Professor Department of Statistics University of California, Davis, US. Prof. Dr. Peter Winker, Professors and Chair of Statistics and Econometrics, University of Giessen, Germany -----	

	----- Stakeholders advisory board ----- Dr. Costas Bekas Head, Research Platform, Citadel Securities, Zurich, Switzerland Dr Michalis Kapsos Quantitative Research Director, Qube Research & Technologies, London, UK Dr Stavros Siokos Astarte Capital Partners LLP, London, UK <u>Local collaborators/stakeholders:</u> Antonia Mavrou, VAT Manager, Deloitte, Cyprus Monica Odysseos, Head of AI and Data Lab, Grant Thornton Dr Christina Orphanidou, Director, Data & AI, Risk Advisory, Deloitte Cyprus Aristos Philis, CEO of KeelX & Director, Strategic Development Department of Lemissoler Navigation Co. Ltd	
--	---	--

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

Areas of improvement and recommendations by EEC	Actions Taken by the Institution	For Official Use ONLY
For the proposed program in Data Science, hands-on experience via projects is highly recommended to be incorporated in all relevant courses. The EEC recommends inclusion of student group work in assignments and projects.	The syllabuses for relevant computing and quantitative courses already include group projects and assignments, in line with the EEC's recommendations. These assignments are integral to the formal evaluation process and contribute to the final grade. Many of these group projects feature real-world applications provided by industry partners, offering students valuable hands-on experience. This approach ensures that students not only acquire practical skills but also engage with current industry challenges.	Choose level of compliance:
The proposed programme should seek input and interaction with industry in order to foster a dynamic learning environment and adapt the programme to this fast-changing area. The practical (optional) training in industry via internships enhances the learning outcome of the programme and supports the goal of acquiring practical industry experience.	The Department acknowledges the importance of industry input and interaction for fostering a dynamic learning environment. The proposed Data Science program includes an optional internship module in the 8th semester, offering 12 ECTS. This module is designed to provide students with real-world experience, modern technologies, and essential skills in communication, networking, and teamwork, preparing them for future professional roles. Internships are also a key feature of current related programs, underscoring our commitment to practical skills	Choose level of compliance:

	and industry readiness. The new Data Science program will continue this tradition, further enhancing students' practical experience through optional internships. The Faculty appreciates the EEC's feedback and will incorporate these recommendations into future training sessions, internship opportunities, and seminars. This will be done in collaboration with the Advisory Board and stakeholders.	
Click or tap here to enter text.	Click or tap here to enter text.	Choose level of compliance:
Click or tap here to enter text.	Click or tap here to enter text.	Choose level of compliance:
Click or tap here to enter text.	Click or tap here to enter text.	Choose level of compliance:

3. Teaching staff (ESG 1.5)

Areas of improvement and recommendations by EEC	Actions Taken by the Institution	For Official Use ONLY
If the new programme is accepted, and given the current workload of the faculty (4 courses for tenure-track and 8 for contract faculty per year), which is heavy enough, new teaching staff is needed for running the programme, especially for topics in data science, machine learning and AI. According to discussions with the faculty members, 4 new faculty are needed to run the programme. In view of the current research profile of the department faculty, this is essential for the successful operation of the proposed programme.	The new program will be supported by seven permanent academic staff members, all of whom hold PhDs and possess extensive expertise in Computer Science, including data science, machine learning, and artificial intelligence. These Faculty members are drawn from three computing-related departments that have formally agreed to teach the relevant courses for the new program. The commitments from the three cooperating departments are documented in the attached minutes. It is important to note that, due to other commitments, only two members of the Department of Electrical Engineering, Computer Engineering, and Informatics were available during the on-site visit on May 22.	Choose level of compliance:
There is an imbalance in the research engagement of the teaching staff. Moreover, there are few externally funded research projects. A suggestion to increase the student research engagement in courses is to link projects and assignments with specific research areas of the faculty.	As noted in Part 5 of this report, new staff members with expertise in Data Science, AI, and Machine Learning will soon join the Department. Their addition is anticipated to strengthen both academic and applied research, thereby increasing student involvement in research projects. This enhanced focus on specific research areas is expected to lead to more externally funded research opportunities.	Choose level of compliance:
The EEC suggests a well-defined structure of synergies and collaborations with other	A formal agreement is established with the Department of Electrical Engineering and Computer	Choose level of compliance:

relevant departments and researchers within the university and abroad, in particular with Computer Engineering which is already hosting a MSc programme in Data Science.	Engineering and Informatics, the Department of Communication and Internet Studies and the Department of Communication and Marketing. The minutes from the relevant departmental meetings are attached to this report. This collaboration is clearly outlined in the agreement and includes synergies such as mutual benefits, joint projects, collaborative research, and the exchange of resources.	
Click or tap here to enter text.	Click or tap here to enter text.	Choose level of compliance:
Click or tap here to enter text.	Click or tap here to enter text.	Choose level of compliance:

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

Areas of improvement and recommendations by EEC	Actions Taken by the Institution	For Official Use ONLY
The students have the opportunity to provide feedback about their courses, but according to the interviews with the students, the feedback forms are quite narrow in scope, with a small number of multiple-choice questions without offering an option to add free-form text comments. The EEC suggests the inclusion of such general suggestions/feedback section in the questionnaires, to give all students the chance to communicate their needs.	The University employs Student Feedback Questionnaires (SFQ) to evaluate and enhance the teaching and learning experience. While current feedback forms primarily consist of multiple-choice questions, the results are carefully reviewed to inform improvements. In response to the EEC's suggestion, the feedback process will be enhanced to include sections for open-ended comments and general suggestions. Additionally, opportunities for bilateral meetings with instructors will be offered as needed, ensuring that students can effectively communicate their needs and provide comprehensive feedback.	Choose level of compliance:
Student representatives participate in committees including quality assurance. However, as both the students and the staff said, this participation is not active. The students in the meeting commented that the representatives are affiliated with political parties. It is important to encourage and engage students to actively participate to the university processes.	The Department is committed to encouraging active student participation in committees and decision-making bodies. Student representatives are included in monthly Department Council meetings, where they present the views and concerns of the student body, make suggestions, and address any emerging issues. Efforts are already made to ensure that these representatives are fully engaged and effectively contribute to discussions and decision-making processes.	Choose level of compliance:
In response to student feedback indicating a desire for more practical learning experiences, the committee recommends	The syllabus includes several courses with compulsory laboratory sessions as part of the overall evaluation process, in addition to	Choose level of compliance:

incorporating mandatory or optional laboratory sessions. More working spaces are needed, especially rooms that allow collaborative work.	written midterm and final examinations. Current working spaces and facilities within the School of Management and Economics, as well as the laboratories of the collaborative computing departments and other University premises (including the library and classroom buildings), are available for students to engage in collaborative work.	
The program does not qualify graduates for accreditation by the Technical Chamber of Cyprus (ETEK), which is the engineering regulatory body in Cyprus. To request ETEK recognition, the program would need to consider strengthening the course curriculum so that the total number of compulsory modules that fall under the IT discipline is significantly increased.	The primary aim of the program is not to seek accreditation from the Technical Chamber of Cyprus (ETEK) as an IT discipline. However, the updated curriculum includes a range of specific computing elective courses that can assist graduates in meeting the ETEK accreditation requirements should they choose to pursue it after graduation.	Choose level of compliance:
Click or tap here to enter text.	Click or tap here to enter text.	Choose level of compliance:

5. Learning resources and student support (ESG 1.6)

Areas of improvement and recommendations by EEC	Actions Taken by the Institution	For Official Use ONLY
The EEC finds that the new programme will be more computationally demanding than existing programmes in the department, e.g., more powerful computers and GPUs. Considering the small size of the IT department compared to university size, it would be beneficial to set plans in motion to acquire the necessary equipment and resources.	The new program's computational demands are supported by a formal collaboration with the Department of Electrical Engineering, Computer Engineering and Informatics, the Department of Communication and Internet Studies and the Department of Communication and Marketing (the last two in the Faculty of Communication and Media Studies). These departments have excellent resources, including computer laboratories, hardware, and software to meet the needs of the Data Science program. Additionally, the University budget allocates annual funds for acquiring new computer equipment. For courses offered by the FAMS Department, the existing labs at the School of Management and Economics and other University premises are equipped to meet the program's requirements.	Choose level of compliance:
Additional human resources are needed to satisfy the needs of the new programme; e.g., hiring more teaching staff/ faculty.	The FAMS Department recognizes the need for additional human resources to support the new program and is taking the following steps: a) In September 2025, the position of Professor in Economics, due to retirement, will be converted to a Professor in Statistical Data Science. This change will strengthen both teaching and research within the	Choose level of compliance:

	Faculty. <i>Details are provided in the attached departmental minutes with date 10/06/2024 (απόσπασμα πρακτικών 153ΗΣ ΣΥΝΕΔΡΙΑΣ ΤΟΥ ΣΥΜΒΟΥΛΙΟΥ ΧΡΗΜΑΤΟΟΙΚΟΝΟΜΙΚΗΣ, ΛΟΓΙΣΤΙΚΗΣ ΚΑΙ ΔΙΟΙΚΗΤΙΚΗΣ ΕΠΙΣΤΗΜΗΣ).</i> b) One position for Lecturer/Assistant Professor in Finance and/or Accounting is currently advertised (Μία (1) θέση ΔΕΠ στη βαθμίδα Λέκτορα ή Επίκουρης/ου Καθηγήτριας/ή στο γνωστικό αντικείμενο «Χρηματοοικονομικά και/ή Λογιστική»). c) Further Faculty positions, including those for Special Teaching Staff, will be announced shortly. Please note that the current teaching staff will fully cover the curriculum requirements for the first five semesters after the program's commencement. New hires will be introduced to address specialised teaching needs for the subsequent semesters.	
Click or tap here to enter text.	Click or tap here to enter text.	Choose level of compliance:
Click or tap here to enter text.	Click or tap here to enter text.	Choose level of compliance:
Click or tap here to enter text.	Click or tap here to enter text.	Choose level of compliance:

6. Additional for doctoral programmes (ALL ESG)

Areas of improvement and recommendations by EEC	Actions Taken by the Institution	For Official Use ONLY
Click or tap here to enter text.	Click or tap here to enter text.	Choose level of compliance:
Click or tap here to enter text.	Click or tap here to enter text.	Choose level of compliance:
Click or tap here to enter text.	Click or tap here to enter text.	Choose level of compliance:
Click or tap here to enter text.	Click or tap here to enter text.	Choose level of compliance:
Click or tap here to enter text.	Click or tap here to enter text.	Choose level of compliance:



7. Eligibility (Joint programme) (ALL ESG)

Areas of improvement and recommendations by EEC	Actions Taken by the Institution	For Official Use ONLY
Click or tap here to enter text.	Click or tap here to enter text.	Choose level of compliance:
Click or tap here to enter text.	Click or tap here to enter text.	Choose level of compliance:
Click or tap here to enter text.	Click or tap here to enter text.	Choose level of compliance:
Click or tap here to enter text.	Click or tap here to enter text.	Choose level of compliance:
Click or tap here to enter text.	Click or tap here to enter text.	Choose level of compliance:

B. Conclusions and final remarks

Conclusions and final remarks by EEC	Actions Taken by the Institution	For Official Use ONLY
Click or tap here to enter text.	Click or tap here to enter text.	Choose level of compliance:
Click or tap here to enter text.	Click or tap here to enter text.	Choose level of compliance:
Click or tap here to enter text.	Click or tap here to enter text.	Choose level of compliance:
Click or tap here to enter text.	Click or tap here to enter text.	Choose level of compliance:
Click or tap here to enter text.	Click or tap here to enter text.	Choose level of compliance:

The Council of the Department of Finance, Accounting and Management Science thanks the EEC for their time, fruitful and constructive discussions and exchange of views during the on-site visit on May 22, 2024. We also thank the Committee for valuable comments and suggestions included in the external evaluation report. The Faculty of the Department takes into serious consideration the recommendations and has deployed specific measures and policies to address all the suggestions of the Committee and commence the programme soonest possible to achieve the highest education standards.

C. Higher Education Institution academic representatives

Name	Position	Signature
Christos Savva	Professor	
Erricos Kontoghiorghe	Professor	
Eleni Kalotychou	Associate Professor	
Demetris Koursaros	Associate Professor	
Click to enter Name	Click to enter Position	
Click to enter Name	Click to enter Position	

Date: 01/08/2024

