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External Evaluation Report

(Conventional-face-to-face programme of study)

- **Higher Education Institution: University of Cyprus**
- **Town: Nicosia**
- **School/Faculty (if applicable): Pure and Applied Sciences**
- **Department/ Sector: Computer Science**
- **Programme of study- Name (Duration, ECTS, Cycle)**

  In Greek:

  Magister Scientiae in Artificial Intelligence

  In English:

  Magister Scientiae in Artificial Intelligence
- **Language(s) of instruction: English**
- **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. Introduction

This part includes basic information regarding the onsite visit.

The External Evaluation Committee (EEC) had a preliminary remote meeting on 26.1.2022 to discuss the program evaluation process. On 27.1.2021, the EEC visited the University of Cyprus and met faculty members, staff and students remotely with an online video conferencing tool in order to evaluate the MSc Program in Artificial Intelligence. The visit was arranged and facilitated by Natasa Kazakaiou, representing the Agency of Quality Assurance and Accreditation in Higher Education. Before the online visit, the EEC members were provided with relevant program documents and videos to review.

The EEC was presented with detailed information about the university, the department and the MSc degree program. During the visit the EEC requested and received additional material including statistics, regulations, and policies. During the site visit, the EEC met university, school and department leadership peers and professors, instructors and administrators. It also met current CS students from other masters programs and PhD programs since there are no current or past students of the program under assessment.

Based on the examination and evaluation of the accreditation materials and the remote site visit, the EEC concludes that the proposed Masters in Artificial Intelligence meets the required standards. The present assessment report describes how the standards are met and provides recommendations and suggestions for improving the program under evaluation.

B. External Evaluation Committee (EEC)

Name	*Position*	*University*
Christina Lioma	Professor	University of Copenhagen
Artur d'Avila Garcez	Professor	City, University of London
Pauline Catriona Haddow	Professor	Norwegian University of Science and Technology
Theodoros Theodorou	Student	University of Edinburgh
Name	Position	University
Name	Position	University

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.

Overall, this is a well-organized program. The program was established with clear motivations, and the topics offered in the program are appropriate. The intended learning outcomes of the program have been overall clearly defined, and the department is assessed as able to provide good learning opportunities and facilities to the students involved in the program. The department is planning to implement a flexible process of teaching and learning.

In terms of quality assurance, the University has had their own quality assurance process since 2001, with rules and processes including external evaluation, thus well established prior to the establishment of the CYQAA. Specifically, the committees for quality assurance and the Postgraduate Studies provide adequate higher level support to ensure the quality and consistency of study programs. The course design quality control involves staff collaboration, graduate student committee approval and department board approval. The process for establishing courses with various levels of approval seems sufficient.

The EEC finds that the Program does meet the EQF level 7 guidelines with respect to knowledge, skills and responsibility and autonomy. The graduate school provides Program support and ensures uniformity of the UCY masters qualification.

In terms of program design, the Masters in AI is designed to meet a broad set of master's types (masters by research, masters by teaching, integrated work experience masters); masters in AI specialisations (Ethics, Natural Language Processing, AI Entrepreneurship); student needs (conversion/advanced). The focus of the program on natural language processing (NLP) was discussed in detail during the EEC online visit. There are various other areas of AI research which are part of the expertise of the staff and which are accounted for in the program only via electives. For this reason, the selection of NLP to have a different status than other relevant areas of application of AI might seem strange. The explanation for this was the focus of the MSc on forming the next generation of AI professionals and the industry needs in NLP. Computer Vision was also noted as a relevant area of application specially in the medical domain.

All courses are offered in English providing the opportunity for international students to follow courses. The EEC finds that the design and approval process follows the Bologna requirements.

The UCY has provided to the EEC clear and up-to-date information about the selection criteria of students for this program, the intended learning outcomes of each course offered in this program as well as the rationale behind them, the types of qualification awarded upon completion of this program, the teaching, learning and assessment procedures to be used by all staff engaged in this program, the pass rates that students should have in order to progress throughout the program, examples of learning opportunities available to students, and a general overview of the potential graduate employment situation. The above information (with the exception of graduate employment) is readily available to students through the UCY website.

Lastly, in terms of information management, the EEC has found that the CYQAA standards are met. UCY collects, monitors and analyses effectively key performance indicators, data profiling the student population, student progression, success and drop-out rates, student satisfaction with the program, and the types of learning resources and student support available to students. Students and staff are represented in the analysis and resulting planning of follow-up activities.

Strengths

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

The ECC has found that this program will be offered to students at international standards in terms of topics, quality of teaching, resources and infrastructures. The content and topics covered by the program are consistent to the objectives of the program, and appropriate to support the development of the students' general competencies, where the students not only get the chance to build their academic background, but also have the opportunity to build their communication and teamwork skills. In addition, the department maintains a national strength in research, and is capable of integrating their research activities in teaching. As a result, the department has been able to bridge the gap between research and teaching, and this program is expected to benefit considerably from such research activities.

The UCY strategic goals of interdisciplinary, socially important, synergies with others and strong international elements are all well met.

The various features that encompass the European collaboration are a strength. Further, the strong focus on Ethics is important and the EU goals to strengthen AI in Europe are clearly addressed. The flexibility in the design of the masters in AI meets the needs of the Cyprus culture and Cyprus industry.

The coherence of the courses seems quite natural with fundamental and Machine Learning courses mandatory at the start of the program and more specialized compulsory and elective courses following.

One important general competence in focus is Entrepreneurship, through a mandatory course and supporting councils. Communication and team skills are shown to be present in many of the courses with a combination of group and individual projects and a clear focus on these skills in the program.

The scope and objectives of the foundation courses seem strong with respect to addressing the learning challenge from the breadth of non AI backgrounds.

International career counseling is perhaps not unique but uncommon and an important way to support mobility of workers whether academic or industrial, particularly in Europe.

The academic contract available online seems sufficient covering important elements such as course outline, methods of assessment, activities required and learning objectives.

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 has identified the following areas of improvement and makes the following recommendations:

The flexibility built into the design of this program does come at a cost and that is potential confusion as to the identity of this particular Masters in AI. This identity challenge may further affect the perceived quality of this program internationally. This is something that could be considered when refining the design of this program in the near future.

There is no fixed international standard for the ECTS requirements for the masters thesis. However, it is worth considering whether the allocated 15 ECTS is in fact sufficient to allow for the required in depth study of a research topic and the associated thesis writeup required. It is a concern that the students

choosing this direction may meet skepticism internationally regarding the quality of this shorter masters thesis element and the consequences that this may give to further studies such as a PhD.

The masters thesis being optional reduces the role of research in teaching for those students not choosing such an option. The masters is, in general, more industry focussed than research focused as it stands. One solution is to make the shorter masters thesis compulsory.

The holistic view of AI that the program seeks to achieve should ensure that the roles of both symbolic and sub-symbolic AI in this holistic view are presented clearly, even if the design choices within the program are more symbolic AI oriented.

The strengths existing in the department and the expectation of student's interests would suggest that Natural Language Processing and Medical/Health AI should perhaps have equal focus in the compulsory courses and thus play a stronger role in the identity of this Masters in AI specialization. One solution, if possible, would be to provide a compulsory course slot where students must take one of 2 stated courses, providing coverage for these two key research areas.

For students with little or no experience in AI, the course fundamentals of AI is essential. However, many undergraduate CS students today are likely to have covered this course in part or entirely at the undergraduate level. To ensure quality, it is important to avoid overlap with earlier studies whilst meeting the broader needs of the students. Further, a frustration was raised by students from CS that there is a wait to get on with advanced topics for those with a stronger CS and/or AI background. Perhaps Fundamentals of AI should be a requirement for those without a similar course at the undergraduate level and a more advanced AI course offering to other students made available.

It is noticed that the UCY website contains little or no information about some of the Masters programs offered. It will be important for this and other masters that the information about the programs is clearly displayed and uptodate.

Joint supervision of masters projects has been discussed. Although the idea is positive for a long term masters project, such a short masters may not be suitable for this concept. A student needs to get to know their supervisor and needs to be drawn in a single specific direction. A second supervisor, in such a short project, can potentially lead to confusion on behalf of the student and more work for the supervisors and is, therefore, discouraged.

It may be considered that to address the Full Time/Part Time challenge, a certain number of places can be reserved for full time students. It is clear that there is a cultural challenge that taking courses part-time and thus extending the time from start to graduation is more important for many students rather than attending the masters full time. To encourage a change, the benefits of a full time masters in AI could be marketed well to the students from their first year of the undergraduate studies. Industry support for this move should also be encouraged. Perhaps study scholarships from industry could also be considered so as to reduce the need to work in parallel.

The course design approval system is sufficient. However, it is noted that special teachers may not be aware of the processes involved. A process for ensuring that all special teachers are informed and aware of their role as well as the role of others in the design /design change of a course is recommended.

The proposed offer of MSc Data Science electives to the AI program is reasonable, although the depth of the delivery required for Data Science and AI may vary. For example, the study of Deep Learning in AI and in Data Science may vary considerably from a narrow focus on algorithms and computational aspects to a more general focus on applications, processes and the use of programming tools for problem solving. It is clear that there is already much experience in addressing the needs of students from different backgrounds

in the fundamental courses. However the same issue exists. Will such courses meet the needs of Msc Data Science students whilst addressing the needs of the Msc AI students.

The focus on the ethics of AI with two compulsory modules seemed exaggerated at first. However, the intention of the team to focus on specific technical aspects associated with ethics as part of the program, such as explainable AI is excellent. The Department does not have a member of staff whose research area is ethics of AI. Collaboration with MSc partners abroad is being sought in the design of the modules, but targeted recruitment may be advisable to meet the needs of delivery of the modules.

In discussions regarding the choice of programming language, both a preference for open source languages as well as specific appropriate programming languages for a given elective were indicated by the staff. It is recommended to coordinate the choice of programming language for the compulsory modules, in particular the Machine Learning and NLP modules and allow freedom of language selection to the staff teaching the specific electives.

At this time, there is little information available about the graduates of Computer Science, except that the job market is strong. More information should be obtained over time and applied for recruiting purposes. Particularly all Masters would benefit from stories of graduates of masters programs displayed on the web site. It is suggested that the usefulness of such marketing requires regular updates with recent graduates and in particular over time to include graduates from this program.

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	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 and student-centred teaching methodology

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 and 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 the 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.

Overall, the EEC found that the process of teaching and learning of this program is appropriate to the topics covered by the program, and the delivery of the program is also appropriate for the expected learning outcomes. Students are provided the opportunity to give their suggestions to the program. The Department provides a supportive and encouraging learning environment to students, where students are not only supported by faculty members but also by the well organized administrative team. In addition, the department provides an encouraging environment to the teaching faculty members. The structure of the program reflects well the student needs for both education and personal wellbeing. The department implements a flexible process of teaching and learning which ensures the quality of the provided program. Student learning takes various forms from lectures to exercises to individual and group projects. The assessment of most courses involves a variety of more traditional and modern elements whilst involving some form of continuous assessment i.e. at least 2 forms of assessment in each course. Active learning with student feedback is in focus. All mid term, final exams and major projects are marked by permanent staff and special scientists (with PhDs). The marking is carried out by staff with no moderator. All other contributions to continuous assessment may be marked by teaching assistants or staff members but are checked by staff members.

Both individual and group work assignments are common. Blackboard and related technologies are applied in the courses. The teaching methods are appropriate to ensure that theory and practice are interconnected in teaching and learning. Further, the optional thesis work enables students to get involved in research.

The practical (optional) training in industry via internships supports the goal of practical industry experience for those that select this option, whether the students follow the research route (thesis selection) or the course route (additional elective courses). The optional research period in the summer provides for additional academic experience. The Teaching and Learning Center provides short courses support for training in soft skills, data analysis and more.

Strengths

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

The inclusion of real world examples in each course provides students with a realism (strategic goal) connecting course theory to AI practice in industry. This is a key strength in AI education sought by industry and the EU.

Webinars and AI camp initiatives are welcome innovations which nevertheless may require clearer assessment criteria with the understanding that these criteria may themselves evolve with changes in content.

It was very positive to see how well-structured the summer industry internship program is. A suggestion made was to consider internships more tightly associated with the MSc dissertation work by offering related masters theses and perhaps joint supervision.

The funding available from UCY together with the wages earned during industry internship are motivators for students. The potential for an industry related research project and the potential for further employment are further motivating factors. The supporting infrastructure for ensuring student support during this training is in place. It is assumed that the funding available from UCY for industrial internships is also available to those choosing the summer paid research option.

The fact that it is common to publish masters work as well as high quality undergraduate projects is a strength and an important motivation goal for the best students.

The program enjoys a good staff-student ratio, which means that each student can get sufficient support.

UCY seems very well equipped and prepared to deal with online learning in the case of a continuing pandemic, such as COVID-19.

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 has identified the following areas of improvement and makes the following recommendations:

The employment of staff within AI Ethics is needed to cover the compulsory focus on Ethics in the study program. In the meantime it is important that the staff teaching the course are identified soon so as to provide time for the material being assembled to be evaluated and organized.

Despite the supporting infrastructure, it is unclear if the learning outcomes of the industry placement are well defined so as to ensure that the requirements of the ECTS credit given are appropriate. It is also suggested that doubling up the value of this experience to students by providing extra credit as well as two sources of payment is perhaps not appropriate. Students are not paid for other credits and thus providing credit for paid work although possible is not encouraged.

The learning outcomes and means of assessment of both the AI on the Edge Webinars and AI Camp and the need to be clarified. For instance, the essay suggestion for assessment of the webinars following groupwise critical reflection does not reflect the teaching strategy proposed for at least two evaluation methods in each course. Further, there are no clear evaluation criteria for how such essays will be marked based on some learning outcomes for the course. It is also not clear who will be responsible for the evaluation of the individual essays. It was suggested that the essays will be shared out and thus come on top of the required teaching load. This additional load may be quite unbalanced due to the talks given and the spread of student interests. One solution for the webinars could be to follow evaluation of other established colloquium/webinar courses. One person should be responsible for evaluation for this course to ensure fair consistent marking. The nature of the essay could be more general, reflecting a number of the talks and the critical brainstorming proposed, involving concrete questions to be answered in the easy and clear guidelines as to the marking. Further, the contribution of the individual to the groupwise critical evaluation could be part of the continuous evaluation. It was presented that the AI camp could include some form of group work with presentations and that the final means of assessment would draw from the strong experience at T.U. Dresden.

Moderation of marking or exam setting, as previously indicated, does not take place as a matter of course, but only as part of an appeals process which, it seems, need to be triggered by the student. The department may want to carry out formal moderation to the assessment and marking. At this stage, such assessment moderation has been carried out by relying on the individual faculty members who produce the assessment. It could be useful to have a type of moderation activity to check the marking. The department has acknowledged the importance of this, and also informed the EEC that this type of practice has not been carried out in the university formally. Nevertheless, the department may want to consider a pilot for this useful academic practice.

There is no formal training requirement for teaching assistants. It is advisable that teaching assistants receive some formal training in their role, especially with respect to marking, given that marking is only checked and not fully moderated.

In terms of student assessment, the MSc dissertation is seen as a major component of student assessment at postgraduate level. In this program, the dissertation is optional. In this case, it is advisable to indicate the difference in award (MSc with dissertation and MSc without dissertation). It is understood that this is a broader matter for the University rather than just this program.

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 EEC considered the submitted documentation and met with staff to understand the clarity and fairness of the approach on how the university recruits, appoints, inducts and supports academic staff in delivering high quality teaching, research and student experience. Based on these, the recruitment and selection procedure seems to be fair and clear. There are clear criteria for every teaching rank (professor, associate professor etc.) and clear guidelines for progression and promotion.

There are some central procedures to support staff induction and staff development. However, these are not systematically structured and there is no training activity menu. On the positive side, the EEC has found that the university is supporting its staff to undertake research and publish their research findings. The link between teaching and research is healthy. Students of the department have been co-authors in scientific publications. Other graduates of the department are pursuing a PhD in this area.

The CVs of existing staff demonstrate very good evidence of appointed academic staff having prior and relevant teaching and research experience in other higher education institutions. Research expertise and publication records are relevant and consistent to the program of study.

The staff-student ratio in the Department seems to be adequate although the proportion of teaching planned for the course by visiting staff is high at almost 1/3. There are plans to hire staff who will be assigned to teach in the masters which is positive. The EEC recommends seeking to reduce the reliance on visiting staff in the longer-term.

Reducing reliance on visiting staff should strengthen the connection between the research that goes on in the Department and the MSc course. Since its creation, the Department has had a strong profile of

research in AI. This could be celebrated more explicitly if not in the choice of compulsory content, in the program offer of electives as a whole.

The planned contribution of PhD students to the teaching and lab support in the program was discussed. It was understood from this discussion that engagement from PhD students is optional, with also optional training offered to the PhD students by the University. With training being optional, the mechanisms to assess the quality of PhD student engagement should be robust so as to address any concerns in a timely fashion and at least recommend training when deemed useful.

The teaching staff all have PhDs, whether permanent or special teachers or are PhD students in the Department who are supporting teaching. All teaching staff have to complete pedagogical training. The Teaching and Learning Center provides support for new hires to achieve the UK PGE certificate. This process is compulsory for new hires but optional for others.

With approximately 40% of the teaching staff in Computer Science due for retirement in the next 10 years, this is quite a concern with respect to the vast funding resources, teaching experience and general experience that will be lost. Three new positions are already in process but restricted to lower grade staff due to the University policy. There are also further positions that may be sought within the limits in staff numbers allocated to the department.

Strengths

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

The balance between the permanent teaching staff and special teachers seems strong, to enable academic and industry presence for the different teaching role requirements in the program. Further, the fact that each permanent teaching staff member has to contribute to different teaching roles from fundamental courses, through electives and at the PhD level, provides an excellent spread of knowledge and experience at all levels.

There are many strong researchers in the department and the design of courses is thus highly influenced by this experience. The students further have a compulsory course including research methods.

Staff expertise is consistent with the program of study and it seems that they receive appropriate support to undertake research. This is evident by the strong research output of the staff involved in this program.

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 has identified the following areas of improvement and makes the following recommendations: To be able to tackle the vast knowledge loss in the coming years by approximately 40% of the staff retiring, there is a focus on young enthusiastic new staff recruitment whilst limiting the selection to those that can speak Greek. In connection to the above point, it is recommended that a mentoring system is set up for these new young researchers that will be recruited. For those up in years there is a time cost to this but a valuable contribution to the future of the department. It is noted that the 50/30/20 position allocation for all permanent staff, which does provide a relatively higher research time allocation (in theory) than some universities, should provide additional time for mentoring and learning. For the language restriction in place, it may be considered whether UCY might follow the model in some other countries, where teaching at the undergraduate level needs to be given in the local language, by allowing a period of time before the new international staff member has to complete language courses to the required level. This is built into

their employment contract. The resistance of supervisors for PhD students to use time on teaching duties is understandable given the fixed research time and the student's need to gain as much research experience as possible to maximize their future prospects in academia. However, restricting teaching experience, particularly as teaching assistants, can disadvantage students for such future positions and thus finding solutions to this issue is encouraged. A possible approach, if the university rules allow, is to extend the period of the PhD by the teaching time allocated. A further possibility is to provide some 4 years PhDs, with 1 year of teaching duties included, perhaps spread over the 4 years. There are challenges with such an approach with EU funded fixed 3 years projects and the need to produce to meet the project deadlines. However, these are solvable issues. There seems to be less clarity as to who will be teaching what and particularly the balance in the individual courses between permanent staff and special teachers. This should be clarified.

Please select what is appropriate for each of the following su-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, processes and criteria

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.

An interesting aspect of this Master is the heterogeneity of the students to be admitted. Generally, a master in AI is of interest not only for students with a bachelor in Computer Science or Engineering, but also in other disciplines like Mathematics, or Physics. This aspect is at the same time a source for possible problems i.e. possible lack of knowledge compared to a richness of knowledge for different students. The admission procedures have been designed to successfully cope with the possible problems indicated above, in that the students with a lack of knowledge are provided with advice and teaching material to cover such gaps.

The program is intended to admit only students with a STEM related first degree. Second-class honours (or equivalent) is the minimum entrance requirements together with interviews of all short-listed candidates. However, given the skills shortage in the area of AI and the level of interest and motivation from students from different backgrounds, the team may wish to consider extending this requirement to specific areas outside of STEM such as economics and healthcare (for those applicants with a clear mathematical and computer science inclination), especially since provision exists already for remedial math and programming requirements.

The number of female students has dropped from around 50% to 10-15% in line with many universities in Europe. A targeted policy is needed to address this.

It seems that, whether a student is part-time or full-time (but delaying courses), progression might be less prioritized than what is commonly accepted for a masters program due to cultural pressures for such

flexibility. Students delaying courses and masters thesis offers a challenge for the masters thesis to be completed.

Students are represented on the various boards so that their voice is heard, it is not however clear whether the representation is based on election by the student body or not.

Strengths

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

The interview is a key component of the student application process. It would be useful to outline for the benefit of the applicants the purpose, goals and intended outcomes of the interview as part of the selection process.

The interviews of short-listed candidates are conducted by the Graduate Program Committee with added members from staff in the program providing consistency and the necessary expertise.

The established process of meetings between students and staff in smaller groups that support selection of specializations, is regarded as a valuable support by students.

International publishing of research work is an important and well used tool to recognise student's research contributions.

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 has identified the following areas of improvement and makes the following recommendations:

Some details about the entrance requirements need further clarification and subsequent publication. For instance, the requirements for selection to interview (selection of applicants who will be shortlisted for an interview) as well as the minimum grade requirements at the undergraduate level should be included as well as how international applicants will be evaluated, particularly addressing the 3 year bachelor (without Honours) norm in some countries. It is noted that most entrance requirements and processes are already publicly available at the UCY website.

One successful technique that may be applied to encourage more female applicants is a national cinema campaign/advert aimed at females. The opportunities in industry for females with computer science background and particularly for this program, AI background, should be in focus by getting industry help. Why do they want female graduates? Former female graduate students from Computer Science can also be interviewed to tell their stories. More generally, a targeted long-term policy is needed to increase the number of female students.

To address the issue of theses that are delayed (without medical or other justifiable causes) it is important that the thesis and coursework delays are limited. Rather than a question of flexibility, the reality is that if these can be postponed then they will end up as lower priority, particularly for part-time students. Students also have no leverage that they can use with employers to enable time off or a reduced load to gain time to complete the coursework or thesis. It is in the employers' interest to have higher educated employees. .

One issue raised by students is that it is important to be able to take advanced courses when starting the masters when you have a relevant background. Spending time on introductory material, to bring students

with non relevant backgrounds uptodate, is affecting their learning. The recommendations given earlier to meet the needs of these students can be considered to improve student satisfaction.

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	Compliant
4.2	Student progression	Compliant
4.3	Student recognition	Compliant
4.4	Student certification	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 EEC was virtually guided through the Department, observing the resources and facilities, and were able to ask questions to the members of academic and administrative staff and students. The overall perception is that the Department has adequate resources and infrastructure to meet the requirements of this program. The department is effective and professional in its learning and teaching activities.

As the student number in the program is small, the teaching rooms are suitable for theoretical, practical and laboratory lessons. The teaching staff of the Department provides timely and effective feedback to their students. The special teaching staff and special scientists have the required qualifications, sufficient professional experience and expertise to teach a limited number of programs of study (except the Ethics course). As evident by their CVs, the scientific merits of the staff are of high standards. Physical resources and support services to the student are adequate. It is worth noting that during the pandemic period, when the University premises were closed, the supporting infrastructure ensured efficient forms of remote teaching.

The library offers group areas and individual areas to assist different reading/discussion needs. The reading rooms are also open 24/7. Further, the library provides optional courses to enable students to learn how to use the library resources. A large collection of physical and digital access to journals, as well as the potential to borrow from other libraries (national and international) is provided.

The mentoring process is established with an advisor assigned to each student. This system seems to be less used, although it was noted by the students as being available and useful.

The various forums in courses are another source of student support.

ERASMUS possibilities are being investigated for both students in and out of UCY. However this process is not in place at this time. Accommodation for graduate students is already available.

Strengths

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

The program has a very good structure and support. Administrative staff are well organized and provide high quality support. The Department is well managed and resources are adequately used to provide excellent quality of services and outputs. The academic faculty is a cohesive group working together to advance the quality of research and teaching in the department. The relatively small size of the department allows for effective informal solutions to operational issues. Students are highly satisfied with the quality of learning and teaching resources, staff expertise and relevance to the program of study and department. A key strength in the department's learning and teaching activities is the academic support given to students throughout their studies.

An important point was raised about intellectual property (IP) rights from the point of view of the student. This applies to cases where either a student wants to open a company or go in an internship, and how a student may find out about IP provisions, such as information about whether copyright of programming code should belong at the different stages of the program to the student, the university or a company offering an internship. The spin-off rules that are in process that require approval up to the Minister of Education will be valuable for students and Staff alike. Spin-off support through the Career Center in the search for Angels and open conferences to develop ideas are excellent initiatives at the university.

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 has identified the following areas of improvement and makes the following recommendations:

The process for IPR seems to be handled by the career office but information as to the person to contact and the process for students should be made publicly available, particularly for this program where Entrepreneurship is in focus.

To ensure the success of the ERASMUS process under consideration it will be important to ensure a range of contracts with different universities, providing sufficient coverage of the compulsory courses in English. Importantly, students will need to know the details of the process to ensure that courses studied abroad will be approved on their return, requiring some form of pre-approval process.

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 doctoral programmes *(ALL ESG)*

Sub-areas

6.1 Selection criteria and requirements
6.2 Proposal and dissertation
6.3 Supervision and committees

6.1 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*

6.2 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.*

6.3 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.

Click or tap here to enter text.

Strengths

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

Click or tap here to enter text.

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.

Click or tap here to enter text.

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

Sub-area		***Non-compliant/ Partially Compliant/Compliant***
6.1	Selection criteria and requirements	Choose answer
6.2	Proposal and dissertation	Choose answer
6.3	Supervision and committees	Choose answer

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.

The EEC reviewed and examined the materials provided by the University of Cyprus pertaining to its Master's Degree Program in AI at the Department of Computer Science. The one-day site visit was held on 27.1.2022.

The EEC was presented with detailed information about the degree program. During the site visit, the EEC met university, school and department leadership peers and met professors, teachers and administrators. They also met current and past students of the department.

Based on the examination and evaluation of the accreditation materials and the remote site visit, the EEC concludes that the required standards are met.

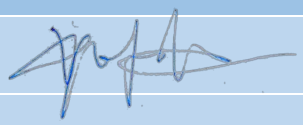
The EEC identified the following key strengths:

- This program adheres to international standards with respect to topics, quality of teaching, resources and infrastructures.
- The department maintains a national strength in research, and integrates research activities into teaching.
- The department has the capacity to look after students on the program during the COVID-19 pandemic.
- The program enjoys a good staff-student ratio, which means that each student can get satisfactory support.
- Staff expertise is consistent with the program of study and staff can receive appropriate support to undertake research. This is evident by the strong research output of the staff involved in this program.
- There is a well balanced mixture of foundational and applied topics in this MSc program.
- The employability of the students who completed related programs is encouraging.
- The program has a very good administrative and managerial structure and support.
- The small size of the department allows for effective informal solutions to operations issues.
- Students of the department are highly satisfied with the quality of learning and teaching resources.

The EEC also identified a number of key areas for improvement and therefore, the following recommendations are made:

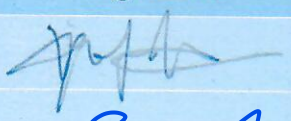
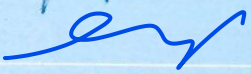
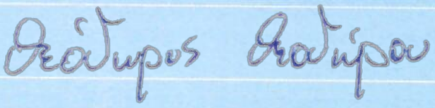
- The EEC recommends that targeted efforts are made to recruit female academic staff and female students of high scientific caliber.
- The EEC recommends that the number and gender balance of admitted students is subject to a targeted strategy aiming to improve it.
- The EEC recommends that the department continues to collaborate with world-leading external researchers and industry to meet the targeted teaching of the programme.

E. Signatures of the EEC

Name	*Signature*
Christina Lioma	
Artur d'Avila Garcez	
Pauline Catriona Haddow	
Theodoros Theodorou	
Click to enter Name	
Click to enter Name	

Date: 9 February 2022

E. Signatures of the EEC

Name	*Signature*
Christina Lioma	
Artur d'Avila Garcez	
Pauline Catriona Haddow	
Theodoros Theodorou	
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Date: 9 February 2022