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Date: 23.1.2021

External Evaluation Report

(Programmatic within the framework of Departmental Evaluation)

Higher Education Institution: University of Central Lancashire, Cyprus (UCLan Cyprus)

● **Town: Larnaca**

● **School/Faculty/Department: School of Sciences**

● **Programme(s) of study - Name (Duration, ECTS, Cycle)**
Programme 1 – Computing (BSc Hons)
In Greek:

Πτυχίο Πληροφορικής**, 4 years/ 240 ECTS**
In English:
 Computing (BSc Hons), 4 years/ 240 ECTS
Language(s) of instruction: English

Programme 2 – Computing (1 year / ECTS, MSc)
In Greek:

Μεταπτυχιακό στην Πληροφορική
In English:
 Computing (1 year / 90 ECTS, Master of Science)
Language(s) of instruction: English

Programme 3 – MSc in Cybersecurity (1 year/90 ECTS, MSc)

In Greek: Μεταπτυχιακό στην Ασφάλεια Κυβερνοχώρου
In English:
 MSc in Cybersecurity (1 year / 90 ECTS, Master of Science)
Language(s) of instruction: English

A. Introduction

This part includes basic information regarding the onsite visit.

Members of the External Evaluation Committee (EEC) reviewed and examined the accreditation reports provided by the School of Sciences at the University of Central Lancashire, Cyprus (UCLan Cyprus) relating to Computing B.Sc. Hons program, M.Sc. in Computing, and M.Sc. in Cybersecurity. The EEC members evaluated the reports individually before the remote site visit on 7-8 January 2021. The EEC had a preliminary remote meeting on 5 January for preparing for the site visit and to discuss the overall evaluation process and the provided reports and documentation. The committee was provided access to video and presentation materials (a virtual tour) of the facilities. The EEC work was supported by digital office tools for the virtual site visit (Zoom) and the preparation of the evaluation report. During the remote site visit, the EEC was presented with the detailed organization, structure, and curricula of the School of Sciences and the three degree programs being evaluated. The EEC had meetings with the university, School and degree program leadership, professors, teachers, and current and past students of the programs. The EEC identified open questions and discussion points based on the provided materials. The EEC received answers to identified open questions during the remote site visit. In addition, the EEC received significant additional details and information regarding the degree programs and the School of Sciences pertaining to their operation, structure, and future plans. Based on the provided information, namely the three accreditation reports, and the remote site visit, the EEC can conclude that the School of Sciences and the three programs being evaluated have high standards and meet the quality expectations. This evaluation report describes how the standards are met and provides additional recommendations for improving the programs.

B.   External Evaluation Committee (EEC)

Name	Position	University
Sasu Tarkoma	Professor, Head of Department	University of Helsinki, Finland
Gregory O'Hare	Professor	University College Dublin, Ireland
Kevin Curran	Professor	Ulster University, UK
Prokopis Antoniou	Student	University of Cyprus

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 each programme of study as a whole.*

- ***The report may also address other issues which the EEC finds relevant.***

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

1.2 **Design, approval, on-going monitoring and review**

Standards

- *The programme of study:*
  o *is designed with overall programme objectives that are in line with the institutional strategy and have explicit intended learning outcomes*
  o *is designed by involving students and other stakeholders*
  o *benefits from external expertise*
  o *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)*
  o *is designed so that it enables smooth student progression*

- o *is designed so that the exams' and assignments' content corresponds to the level of the programme and the number of ECTS*
- o *defines the expected student workload in ECTS*
- o *includes well-structured placement opportunities where appropriate*
- o *is subject to a formal institutional approval process*
- o *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*
- o *is regularly monitored in the light of the latest research in the given discipline, thus ensuring that the programme is up-to-date*
- o *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*
- o *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:*
  - o *selection criteria*
  - o *intended learning outcomes*
  - o *qualification awarded*
  - o *teaching, learning and assessment procedures*
  - o *pass rates*
  - o *learning opportunities available to the students*
  - o *graduate employment information*

1.4 Information management

Standards

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

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- *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.

Findings for Computing (BSc Hons)

Given that the degree programs result in dual degrees given by UCLan Cyprus and UCLan UK, the degree program content and grading follow the standards and expectations of the two organizations and countries. The B.Sc. program is well aligned with professional education and the degree is accredited by the British Computing Society. The program covers a range of topics constrained by the size of the faculty. The program has a small number of students and they are supported by a very good student-teacher ratio. The program advocates student-centered learning. The School aims to have a moderate increase in students in the next few years.

Findings for Computing (1 year / ECTS, MSc)

The M.Sc. has a professional focus and it is motivated by the ACM curriculum. The M.Sc. level courses have been developed for the program and deepen the B.Sc. content. The students receive guidance relating to the degree, courses, and the preparation of the M.Sc. thesis. The guidance and tutoring include ethical and legal matters, sustainable computing, and general information on scientific writing.

Findings for MSc in Cybersecurity (1 year/90 ECTS, MSc)

The program is among the first Cyber Security programs in Cyprus. The program offers a comprehensive and well-motivated selection of modules on important security-related topics. The program content has been developed based on the current expectations for cybersecurity programs, academic profiles of the teachers as well as industry feedback. This program has different entry requirements compared to the M.Sc program in Computing.

Strengths

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

Strengths for Computing (BSc Hons)

Industry relevance is commendable. Given the small student numbers, a closeness of educational experience emerges resulting in excellent student support. Very good student feedback (90% of students have given positive feedback).

Strengths for Computing (1 year / ECTS, MSc)

The students have a versatile set of modules that can be taken, the modules being shared by the M.Sc. programs. M.Sc. thesis can be prepared in an industry setting and there are procedures supporting this. In all, the industry connection is commendable.

Strengths for MSc in Cybersecurity (1 year/90 ECTS, MSc)

The program covers important areas in cybersecurity and there appears to be a good balance between theory and practice. The program structure is actively developed and demonstrated by making the information warfare module optional in the new curriculum.

Common strengths for the three programs
The rapid response across all programs to the covid situation was noted and applauded.
The facilities represent the state of the art and provide excellent support for both education and research.

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.

Areas of improvement and recommendations for *Computing (BSc Hons)*

The program covers many topics and many of them relate to professional aspects in computing. The professional relevance is commendable; however, a B.Sc. program in computing is expected to also cover more theoretical aspects of computer science. It would be important to revisit the key core computer science topics and ensure that they are covered sufficiently.

The first-year CS curriculum seems relatively light. The committee note that this is a four-year degree program; however, it is felt that if further CS module could be introduced in the first year. One suggestion offered was the inclusion of a module offering glimpses of modules to be undertaken in subsequent years.

The committee noted a large number of optional modules, however, they recommend consideration of the associated curricula burden for faculty. While this effort is applauded the question remains as to the efficacy of maintaining modules with very low student numbers.

Areas of improvement and recommendations for *Computing (1 year / ECTS, MSc)*

The degree program offers a versatile set of modules that the students can select. The EEC recommends examining the combination of modules and the core computer science contents of the modules for ensuring that the degree has sufficient coverage and depth of core computer science topics.

The degree program in Computer does not have significant machine learning and AI content. Given that AI is an integral part of digitalisation and the digital infrastructure, the EEC recommends the M.Sc. in Computing to increase machine learning content. For example, the module Exploratory Data Analysis can have more ML focus. In the longer term, the EEC suggests exploring the AI theme as a new program on the B.Sc. level. Experts in AI area are highly sought; however, a new program would need to position itself with the similar programs already offered by other universities.

Areas of improvement and recommendations for *MSc in Cybersecurity (1 year/90 ECTS, MSc)*

This program has different entry requirements compared to the M.Sc program in Computing. The EEC recommends the harmonization of the entry requirements.

The program does not emphasize cryptography or the mathematical aspects of cybersecurity. These could be offered via an optional module to those students who have limited cryptography and mathematics background when starting the M.Sc. studies.

The content on the cyberwarfare module is useful and relevant however it may be worth looking at replacing this module with another which offers more practical training to students.

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

Sub-area		Non-compliant/ Partially Compliant/Compliant		
		Computing (BSc Hons)	Computing (1 year / ECTS, MSc)	MSc in Cybersecurity (1 year/90 ECTS, MSc)
1.1	Policy for quality assurance	C	C	C
1.2	Design, approval, on-going monitoring and review	C	C	C
1.3	Public information	C	C	C
1.4	Information management	C	C	C

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

You may also consider the following questions:

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

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- *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.

Findings for the three programs:

The Department establishes student admission criteria for each programme, which are adhered to.   The three programs have excellent industry relevance and the studies support professional certification. The number of students in the teaching rooms is suitable for theoretical, practical, and laboratory lessons. The teaching materials are up-to-date and of an appropriate standard.

The teaching staff of the Department seems to have regular and effective communication with their students and provide timely and effective feedback to their students. Students were very complimentary of access to staff and appreciate the criteria and the method of assessment as well as the criteria for marking being published in advance. The learning process is properly designed to achieve the expected learning outcomes. The assessment allows students to demonstrate the extent to which the intended learning outcomes have been achieved.

The members of teaching personnel for each course have the relevant formal and fundamental qualifications for teaching the course, as described by the legislation including subject specialisation and publications within their respective disciplines.

Strengths of the three programs

The teaching staff of the Department seems to have regular and effective communication with their students and provide timely and effective feedback to their students.

The ratio of the number of students to the total number of teaching personnel is adequate for the support and safeguarding of the programme's quality.

The great majority of teaching is delivered by resident faculty that are employed on a full-time basis and all full-time staff have Ph.D. qualifications.

Areas of improvement and recommendations for the three programs

The university does not have an instrument for sabbaticals. The EEC recommends developing an instrument for enabling both short-term and longer-term research visits. In addition, inter-sectoral staff mobility with industry would appear to be beneficial in supporting the development and exchange of knowledge and skills building on the synergies between the academic environment and the industry.

The committee would encourage examination of the proportions of full-time faculty and adjunct faculty. The committee would welcome an increase in full-time faculty and their reduction in adjunct faculty, commensurate with the aim of increasing student numbers.

The EEC values the real-life industry relevance of the degree programs; however, recommends strengthening also the research connection of the M.Sc. degree programs.

Faculty research productivity is paramount. In order to facilitate this faculty-student contact hours should be monitored and perhaps reduced. Research output is a key parameter in global university rankings.

UCLan Cyprus does not have a Ph.D. program at the moment. A number of students have continued their Ph.D. studies at UCLan UK. The EEC recommends exploring the possibilities of a joint Ph.D. program with the UK campus. This could motivate research-oriented students to choose the M.Sc. programs at UCLan Cyprus. A Ph.D. program is a very necessary instrument for supporting research in general. This would necessitate dedicated research accommodation for the Ph.D. students. A critical mass of Ph.D. students would help the research student experience. Ph.D. students can help in running laboratories and guiding undergraduate/master's theses as part of the research training. The committee would encourage this.

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

Sub-area		Non-compliant/ Partially Compliant/Compliant		
		Computing (BSc Hons)	Computing (1 year / ECTS, MSc)	MSc in Cybersecurity (1 year/90 ECTS, MSc)
2.1	Process of teaching and learning and student-centred teaching methodology	C	C	C
2.2	Practical training	C	C	C
2.3	Student assessment	C	C	C

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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.*

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.

Findings for Computing (BSc Hons)
The number of the teaching staff is adequate to support the programme of study. The teaching staff status is appropriate to offer a quality programme of study. The visiting staff number does not exceed the number of the permanent staff. There is sufficient evidence of staff on this programme linking their research to their teaching. Promotion processes seem transparent and staff engage in professional and teaching skills training.

Findings for Computing (1 year / ECTS, MSc)
The number of the teaching staff is adequate to support the programme of study. The teaching staff status is appropriate to offer a quality programme of study. The visiting staff number does not exceed the number of the permanent staff. There is sufficient evidence of staff on this programme linking their research to their teaching. Promotion processes seem transparent and staff engage in professional and teaching skills training.

Findings for MSc in Cybersecurity (1 year/90 ECTS, MSc)
The number of the teaching staff is adequate to support the programme of study. The teaching staff status is appropriate to offer a quality programme of study. The visiting staff number does not exceed the number of the permanent staff. There is sufficient evidence of staff on this programme linking their research to their teaching. Promotion processes seem transparent and staff engage in professional and teaching skills training.

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

Strengths for Computing (BSc Hons)

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The team has provided a wide range of relevant modules that are core to any computing course.

Strengths for Computing (1 year / ECTS, MSc)

The team has some very strong programming backgrounds. This is reflected in course content.

Strengths for MSc in Cybersecurity (1 year/90 ECTS, MSc)

Many members of the staff are engaged in active cybersecurity research with good publications in security journals.

Area of improvement for the three programs:

The committee applauds the programs for their close engagement with the companies; however, the counsel a judicious balance between training and education. It is noted that adjunct staff present with specialized industrial knowledge and expertise.

There is a wide range of assessment instruments used in delivering the modules.

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.

Areas of improvement and recommendations for Computing (BSc Hons)

The first-year CS curriculum seems relatively light. The committee note that this is a four-year degree program; however, it is felt that if further CS module could be introduced in the first year. One suggestion offered was the inclusion of a module offering glimpses of modules to be undertaken in subsequent years.

The committee recommends monitoring the scheduling and burden of assignments for students in order to avoid clustering and disproportionate burden at given times.

Areas of improvement and recommendations for Computing (1 year / ECTS, MSc)
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Areas of improvement and recommendations for MSc in Cybersecurity (1 year/90 ECTS, MSc)
The content on the cyberwarfare module is useful and relevant however it may be worth looking at replacing this module with another which offers more practical training to students.

Area of improvement for the three programs:

The committee encourages the staff to continue with the production of high-quality research publications. In some cases, research output seemed to be declining given teaching work.

The committee noted a large number of optional modules, however, they recommend consideration of the associated curricula burden for faculty. While this effort is applauded the question remains as to the efficacy of maintaining modules with very low student numbers.

The committee recommends exploring the use of blended learning post-covid.

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

Sub-area		Non-compliant/ Partially Compliant/Compliant		
		Computing (BSc Hons)	Computing (1 year / ECTS, MSc)	MSc in Cybersecurity (1 year/90 ECTS, MSc)
3.1	Teaching staff recruitment and development	C	C	C
3.2	Teaching staff number and status	C	C	C
3.3	Synergies of teaching and research	C	C	C

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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.

Findings for the three programmes

In the three degree programs, the students receive dual-degree certificates from UCLan Cyprus and UK, respectively. Certification includes details on the degree structure, learning goals, and level of achievement. The degree program design has taken the ACM curriculum into account and the programs are aligned with industry certifications such as Cisco CCNA and the Linux professional curriculum. There are excellent synergies in administration functions, planning of teaching, and best practices with the UCLan UK. The students receive help and support from the administration regarding the admission and education-related forms and processes. The Admission Team is responsible for the processes. Approximately 30% of the B.Sc. students continue to the M.Sc. in Computing.

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

Strengths for the three programs

The student selection process is transparent and the process is implemented in a consistent manner.

Student study progress is monitored and feedback is gathered on a systematic basis.

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.

<u>*Areas of improvement and recommendations for*</u> *the three programs*

The student selection criteria differ between the Computing and Cybersecurity M.Sc. programs.

The committee encourages the internationalization of the M.Sc. programmes.

The first-year CS curriculum seems relatively light. The committee note that this is a four-year degree program; however, it is felt that if further CS module could be introduced in the first year. One suggestion offered was the inclusion of a module offering glimpses of modules to be undertaken in subsequent years.

The programming courses start with imperative Java and object-oriented programming is introduced later. The committee invites the B.Sc. program to consider objects early versus objects late OOP learning strategy. The committee notes the current objects late strategy. Object-oriented concepts are, however, "informally" introduced in the games module in year two. Harmonization of these strategies would strengthen the programming modules.

The committee encourages the introduction of an AI module.

The committee noted a large number of optional modules, however, they recommend consideration of the associated curricula burden for faculty. While this effort is applauded the question remains as to the efficacy of maintaining modules with very low student numbers.

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

Sub-area		Non-compliant/ Partially Compliant/Compliant		
		Computing (BSc Hons)	Computing (1 year / ECTS, MSc)	MSc in Cybersecurity (1 year/90 ECTS, MSc)
4.1	Student admission, processes and criteria	C	C	C
4.2	Student progression	C	C	C
4.3	Student recognition	C	C	C
4.4	Student certification	C	C	C

ΔΙΠΑΕ ΦΟΡΕΑΣ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΤΗΣ ΑΝΩΤΕΡΗΣ ΕΚΠΑΙΔΕΥΣΗΣ
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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.*

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- *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.

Findings for all three programs

The degree programs advocate student-centered learning and the programs have a relatively small number of students resulting in a favourable student-teacher ratio. The students appear to enjoy excellent tutoring and mentoring in the programs. Student satisfaction is a key performance indicator and the degree programs have attained top results in this metric. 75-80% of the graduates are being employed within three years. 83% of the students are reported to complete annual studies with very few interruptions or withdrawals.

The degree programs are based on modules. Students have a selection of optional modules depending on the degree program. The students are asked during the enrollment process what modules they plan to take. The B.Sc. and M.Sc. program does not have a significant overlap in the modules. The module offering is based on student participation and a module is not given if the quota is not reached. This results in unpredictability in terms of the modules that are given; however, the uncertainty is mitigated by estimating module popularity and also by the other programs sharing modules.

The staff is well aware of the quality assurance policy and it is an integral part of the everyday operations. The students benefit from a very good student-teacher ratio and student feedback is very positive.

Modules have been aligned with professional certification, such as Cisco CCNA and Linux professional curriculum.

Overall, the programs receive feedback from the industry and the graduating students appear to have excellent career prospects in the industry. The interviewed students emphasized the value of the degrees.

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

Strengths for Computing (BSc Hons)

UCLan has good international networks and students have possibilities for internships abroad.

During the discussions, the teaching and administration staff had a positive and forward-looking attitude giving the impression that the degree programs have a solid basis. Interviews with the students supported this view.

Student feedback, complaints, and ideas are taken into account. The students reported that improvement ideas have been considered and there was an example of a course improvement initiated by a student.

The building facilities that were assessed based on the provided videos appear to be excellent and remote education is implemented following good practices. The laboratories and IT infrastructure support studies and research activities.

Strengths for Computing (1 year / ECTS, MSc)

Same as above.

Strengths for MSc in Cybersecurity (1 year/90 ECTS, MSc)

The program provides practice and industry-oriented cybersecurity education that is aligned with professional requirements. The program structure is versatile and involves the necessary laboratory and cloud-based experiments to promote an empirical understanding of cybersecurity topics. The modules and their key focus areas are relevant and interesting including IoT, industrial systems, ethical hacking, and information warfare. The program receives feedback from the industry regarding the topics.

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.

Areas of improvement and recommendations for Computing (BSc Hons)

The program is recommended to examine the balance between core computer science and the applied industry-oriented topics. Industry relevance is an important advantage of the program; however, there is a risk of vendor lock-in and losing relevance when technologies and industry requirements change. The EEC recommends expanding the AI and machine learning related topics.

The School aims to increase the number of female students in the degree programs and the staff is active in related ACM activities. The EEC commends the work and recommends continuing these efforts. The EEC notes the high representation of female faculty members, which is a very good situation at a computer science unit.

Areas of improvement and recommendations for Computing (1 year / ECTS, MSc)

Same as above.

Areas of improvement and recommendations for MSc in Cybersecurity (1 year/90 ECTS, MSc)

It is recommended to develop the laboratory environment to be able to experiment with cloud-connected and cloud-based applications and services, for example considering Software Defined-Networks (SDN) and open cloud technologies such as OpenStack and container-based solutions.

The committee recommends the School to support 24/7 access to the laboratories.

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

Sub-area	Non-compliant/ Partially Compliant/Compliant

		Computing (BSc Hons)	Computing (1 year / ECTS, MSc)	MSc in Cybersecurity (1 year/90 ECTS, MSc)
5.1	Teaching and Learning resources	C	C	C
5.2	Physical resources	C	C	C
5.3	Human support resources	C	C	C
5.4	Student support	C	C	C

D.   Conclusions and final remarks

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

The EEC evaluated the School of Computing and the B.Sc. program in Computing, M.Sc. in Computing, and M.Sc. in Cybersecurity based on the provided accreditation reports and the remote site visit. The School and the three programs were found to have high standards and meet the quality expectations. Based on the materials and the site visit, the EEC has identified a number of areas in which the School and the three programs can make improvements to strengthening their profile and increasing impact.

UCLan Cyprus and the School of Computing advocate student-centered learning and the three evaluated programs have a relatively small number of students resulting in a favorable student-teacher ratio. The students appear to enjoy excellent tutoring and mentoring in the programs. There would seem to be a significant emphasis upon student learning support and the students themselves seem to both recognize and value such.

As a private university, there is a focus on education with an emphasis on degree programs that are self-sustaining in terms of finances. Thus the workload profile of the staff is teaching-oriented; however, research is an integral part of the strategy and the aspirations of the university, and while this is clearly evident an environment needs to be maintained that fully recognizes, measures and rewards research endeavor.

UCLan Cyprus has excellent synergies with UCLan UK at Preston. Joint planning of education appears to work very well. It is important that UCLan Cyprus continues to leverage resources and skills at UCLan Preston and conversely that UCLan Preston leverages emerging expertise at UCLan Cyprus. This relationship can prove mutually beneficial.

The EEC recommends to further leverage the synergies between UCLan Cyprus and UCLan UK while taking the challenges introduced by Brexit into account, for example differing privacy and other regulations. The joint delivery of education is a significant opportunity that should be explored and which may yield critical mass in certain programmes and afford better economies of scale.

The School is focused on developing and improving the current programs. The EEC commends this strategy and encourages a strategy of managed growth of the School and its programs by leveraging the synergies with UCLan UK and developing programs based on the current strengths and perceived opportunity.

The assignment of duties follows the regular planning process and cycle of the university and the school. There is an annual meeting for reviewing workloads and preparing for the next academic year. The workload model is based on the 40-40-20 model, in which time is divided between education and research and with a smaller percentage with administrative duties. The assignment is interactive and takes into account the teacher's situation and plans.

Faculty research productivity is paramount. In order to facilitate this faculty-student contact hours should be monitored and perhaps reduced. Research output is a key parameter in the global university rankings.

The School of Computing has ambitions of increasing the student intake during the next years that requires the optimization of resources, especially balancing education and research activities. The School has significant potential in attracting more research funding from Horizon Europe. The integral connection with the UCLan UK can help in establishing more opportunities for international research activities and projects.

The School's three evaluated degree programs have high industry relevance and the studies support competence building by being aligned with industry certifications. The EEC values the real-life industry relevance of the degree programs; however, recommends strengthening also the research connection of the M.Sc. degree programs.

The School would benefit from more systematic scientific and industrial feedback regarding the degree programmes helping to ensure academic relevance while anticipating near-future industry needs. The degree programs emphasize professional aspects in Computer Science and having a wider scope in this would make the degrees more relevant for the future needs of the industry. To this end, an industry advisory board is recommended as an instrument for supporting the longer-term development of the School and the degree programs.

UCLan Cyprus does not have a Ph.D. program at the moment. A number of students have continued their Ph.D. studies at UCLan UK. The EEC recommends exploring the possibilities of a joint Ph.D. program with the UK campus. This could motivate research-oriented students to choose the M.Sc. programs at UCLan Cyprus. A Ph.D. program is a very necessary instrument for supporting research in general.

The university does not have an instrument for sabbaticals. The EEC recommends developing instruments for enabling both short-term and longer-term research visits. In addition, inter-sectoral staff mobility with industry would appear to be beneficial in supporting the development and exchange of knowledge and skills building on the synergies between the academic environment and the industry.

E.   Signatures of the EEC

Name	Signature
Sasu Tarkoma	
Gregory O'Hare	
Kevin Curran	Kevin Curran
Prokopis Antoniou	

Date: 23.1.2021