Doc. Number: 300.1.1

M

# Cyprus Agency of Quality Assurance and Accreditation in Higher Education

**Republic of Cyprus** 

# External Evaluation Report Program of Study

**Institution: The Cyprus Institute** 

Program of Study: Master of Science in Simulation and

**Data Science** 

#### **TABLE OF CONTENTS**

Instructions	3
External Evaluation Committee (EEC)	4
Introduction	5
Findings	6
Conclusions and Suggestions of the External Evaluation Committee	12
Document Number: 300.1	13

#### **INSTRUCTIONS:**

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 2016" [N. 136 (I)/2015].

The document is duly completed by the External Evaluation Committee for each program of study. The ANNEX (Doc. Number 300.1) constitutes an integral part of the external evaluation report for the external evaluation accreditation of a program of study.

#### **EXTERNAL EVALUATION COMMITTEE:**

NAME	TITLE	UNIVERSITY / INSTITUTION
Professor Thomas Gärtner	Chair of External Evaluation Committee (EEC)	University of Nottingham
Assoc Professor Neil Hurley	Member of External Evaluation Committee (EEC)	University College Dublin
Professor Ioannis Emiris	Member of External Evaluation Committee (EEC)	National and Kapodistrian University of Athens
Georgios Tertytchny	Member of External Evaluation Committee (EEC)	University of Cyprus

#### INTRODUCTION:

#### I. The External Evaluation procedure

- Short description of the documents that have been studied.
- Application for Evaluation Accreditation
   Document prepared by The Cyprus Institute as part of the External Evaluation procedure containing all the necessary information regarding the program of study under evaluation. More specifically this document consists of the program's general profile, the program's content, application information, teaching personnel, courses and teaching periods in the program of study.
- 2. Instructors CVs:

Detailed CV for each member of the teaching staff related to the program of study under evaluation.

- 3. Educational Quality Management System (EQMS)

  Document describing the Cyprus Institutes' quality management system.
- 4. Program Handbook:

Provides information about the Simulation and Data Science Master's program, and key information on the Cyprus Institute. More specifically this handbook provides information about the structure of theprogram and courses, registration, tuition and other fees, the program's personnel and academic matters.

5. Courses Handbooks:

For each course of the program under evaluation a handbook was studied containing information about the course being the course purpose, learning objectives, outline and assessment, coursework submissions, lectures, practicals and submissions and related bibliography. Also, each handbook contains necessary information about the instructor being the instructor's profile, contact details and also an indicative course timetable

- 6. Cyprus Institute Graduate School Prospectus
  Full prospectus of all the programs offered at Cyprus Institute, showing the
  draft description of the Master's in Simulation and Data Science
- 7. Diploma draft for the program under evaluation
- 8. Europass diploma supplement

#### Short description of the on site visit

During the on-site visit at The Cyprus Institute on the 26<sup>th</sup> of March, a list of different presentations related to the Institute and also to the program of study under evaluation were given by the personnel of the Institute. We were informed about the Cyprus Institute in general and the academic aspect of the program. We were informed also about the research in the particular field of the program under evaluation and some important information regarding the overall management of the program and the sustainability plan they performed for the program under evaluation. We then have a meeting with the President of the Cyprus Institute and with members of the teaching staff (we had a talk with three members of the Faculty) and a talk with a PhD student.

The schedule was rather limited in time for the interviews with teaching personnel, students and managers in the afternoon session.

#### Short description of the on site infrastructure visit

During our time at the Cyprus Institute on the 26<sup>th</sup> of March we also visited the infrastructures of Cyl facilities. There we were shown the graduate school facility, the High-Performance Computing Facility (Cy-TERA), where a presentation was given to us by Dr. George Tsouloupas for Cy-TERA uses. Also, we had a small tour to the High-Performance Computing room where the components of the computers where explained in detail. Following up we visited the Linear Freisnel Solar Cooling system (LIFE) where a talk from Dr Alaric Montenon was given about how they use solar energy for cooling system of a particular building at the Cyl. We then visited the unmanned systems research laboratory (USRL) where we had a small talk given by Professor Jean Sciare. Finally, we completed our visit to the facilities of the Cyl with a visit on the Visualization Laboratory where associate professor Theodoros Christoudas showed us some examples of simulations and visualizations made for academic purposes by undergraduate and postgraduate students of the Cyl.

#### II. The Internal Evaluation procedure

• Comments concerning the quality and the completeness of the application submitted by the institution of higher education (Doc. Number 200.1), as well as concerning the overall acceptance of and participation in the quality assurance procedures, by the institution in general and by the program of study under evaluation in particular.

The documentation provides a good overview of the program of study under evaluation. It provides a clear description of the organizational structure of the academic program. Key personnel are well described in terms of their competency to deliver the program. The infrastructure that supports the program's delivery is made clear.

#### **FINDINGS:**

#### 1. EFFECTIVENESS OF TEACHING WORK – AVAILABLE RESOURCES

- Organization of Teaching Work
  - The overall program structure is appropriate for delivery of this program. Plagiarism and mentoring and not well addressed in the documentation.
- Teaching
  - The teaching methods, with significant practical work, alongside the lecture material is appropriate for the small class size expected for this program.
- Teaching personnel
  - The personnel has sufficient competency and experience to deliver the program.

#### 2. PROGRAM OF STUDY AND HIGHER EDUCATION QUALIFICATIONS

Purpose and Objectives and learning outcomes of the Program of Study

The objectives are well served by the program of study and the learning outcomes of its constituent courses.

#### - Structure and Content of the Program of studies

Simulation science is well covered, but data science is somewhat weak. There is some unnecessary overlap between the content of courses. Some foundations are missing from the program.

#### - Quality Assurance of the Program of studies

A comprehensive quality assurance mechanism has been provided.

#### - Management of the Program of Study

Management of the program is very good.

#### - International Dimension of the Program of Study

The Institute is well connected internationally.

#### - Connection with the labor market and the society

A good case has been made for the relevance of this program to the labour market and society.

#### 3. RESEARCH WORK AND SYNERGIES WITH TEACHING

#### - Research Teaching Synergies

Research teaching synergies are strong. Academic staff have shown a clear connection between their research activities and the courses that they are teaching.

### 4. ADMINISTRATION SERVICES, STUDENT WELFARE AND SUPPORT OF TEACHING WORK

#### - Administrative Mechanisms

Administrative mechanisms are excellent.

#### Infrastructures / Support

Infrastructure and support are good. The library needs to be extended, but this is currently being carried out.

#### - Financial Resources

Financial resources are sufficient to cover the delivery of the program. We query if the level of fees proposed is unnecessarily high, in light of projected revenue after year 3 of the program. Consideration should be given to increasing the financial support to students in order to attract top-level students to the program.

#### 5. DISTANCE LEARNING PROGRAM

N/A

#### 6. DOCTORAL PROGRAMS OF STUDY

N/A

### CONCLUSIONS AND SUGGESTIONS OF THE EXTERNAL EVALUATION COMMITTEE<sup>1</sup>

• The present situation of the program, good practices, weaknesses that have been detected during the external evaluation procedure by the external evaluation committee, suggestions for improvement.

The program is largely well-planned and the committee have high confidence in its successful delivery. Our confidence is shown in the generally high marks that we have given in the following sections and in our positive comments above. Nevertheless, some weaknesses should be addressed, in particular:

- The program is currently specified as a 13-month program, as evidenced from the stated start and end dates. It is necessary that the program is extended to 14 months by allowing additional weeks for completion of the thesis.
- The 10 ECTS course structure with relatively low contact hours should be addressed by increasing the number of contact hours per week by at least one hour. Currently, the number of contact hours is 3 per week, which is too little for such broad courses, with large content coverage.
- Care should be taken to minimise the overlap between courses. For example, the
  mandatory course 404 overlaps strongly with some other courses. We suggest that
  the content of this course is reconsidered. Consideration should be give to
  introducing some more foundational material in the program, for instance from
  statistics.
- There is a shortage of personnel in data science which must be addressed.
   Consequently, there is an imbalance between simulation science and data science in the program. We expect that this will be rectified, given the hiring plans that are in place.
- All courses are very broad and attempt to cover many areas. There is a danger that some topics will not be covered in sufficient depth to give students an advanced understanding. This could be addressed by providing focused electives, perhaps of size 5 ECTS.
- Plans should be in place for ensuring quality teaching in light of the expected mixed backgrounds of students admitted to the program. This issue can be handled with the initial intake of <10 students, but will become more difficult when the number of students on the program grows.

<sup>&</sup>lt;sup>1</sup> It is highlighted, at this point, that the External Evaluation Committee is expected to justify its findings and its suggestions on the basis of the Document num.: 300.1. The External Evaluation Committee is not expected to submit a suggestion for the approval or the rejection of the program of study under evaluation. This decision falls under the competencies of the Council of the Agency of Quality Assurance and Accreditation of higher education.

Doc. Number: 300.1

# Quality Standards and Indicators External Evaluation of a Program of Study

Institution: The Cyprus Institute

Program of Study: Master of Science in Simulation and Data Science

Duration of the Program of Study: 13 months

Evaluation Date: 26-27th of March 2018

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 2016".

The document describes the quality standards and indicators, which will be applied for the external evaluation of programs of study of institutions of higher education, by the External Evaluation Committee.

**DIRECTIONS:** Note what is applicable for each quality standard/indicator.

- 1. Applicable to a minimum degree
- 2. Applicable to a non satisfactory degree
- 3. Applicable to a satisfactory degree
- 4. Applicable to a very satisfactory degree
- 5. It applies and it constitutes a good practice

It is pointed out that, in the case of standards and indicators that cannot be applied due to the status of the institution and/or of the program of study, N/A (= Not Applicable) should be noted and a detailed explanation should be provided on the institution's corresponding policy regarding the specific quality standard or indicator.

#### **Members of the External Evaluation Committee**

NAME	TITLE	UNIVERSITY / INSTITUTION
Professor Thomas Gärtner	Chair of External Evaluation Committee (EEC)	University of Nottingham
Assoc Professor Neil Hurley	Member of External Evaluation Committee (EEC)	University College Dublin
Professor Ioannis Emiris	Member of External Evaluation Committee (EEC)	National and Kapodistrian University of Athens
Georgios Tertytchny	Member of External Evaluation Committee (EEC)	University of Cyprus

Date and Time of the On-Site Visit: 26th of March 2017

Duration of the On-Site Visit: 9 hours (From 9am in the morning to 6pm in the afternoon)

1. EFFECTIVENESS OF TEACHING WORK – AVAILABLE RESOURCES											
1.1	Organiz	zation of teaching work	1	2	3	4	5				
1.1.1	study, a	dent admission requirements to the program of are based on specific regulations which are to in a consistent manner.				Х					
1.1.2	construc	imber of students in each class allows for ctive teaching and communication, and it es positively to the current international ds and/or practices.					X				
1.1.3	the qual	anization of the educational process safeguards lity implementation of the program's purpose and es and the achievement of the learning es. Particularly, the following are taken into ration:									
	1.1.3.1	The implementation of a specific academic calendar and its timely publication.					Х				
	1.1.3.2	The disclosure of the program's curricula to the students, and their implementation by the teaching personnel					X				
	1.1.3.3	The course web-pages, updated with the relevant supplementary material					Х				
	1.1.3.4	The procedures for the fulfillment of undergraduate and postgraduate assignments / practical training					X				
	1.1.3.5	The procedures for the conduct and the format of the examinations and for student assessment				X					
	1.1.3.6	The effective provision of information to the students and the enhancement of their participation in the procedures for the improvement of the educational process.					X				
1.1.4		te and modern learning resources, are available tudents, including the following:									
	1.1.4.1	facilities					X				
	1.1.4.2	library				Χ					
	1.1.4.3	infrastructure					X				

	1.1.4.4	student welfare			X
	1.1.4.5	academic mentoring			X
1.1.5		y for regular and effective communication, n the teaching personnel and the students, is		X	
1.1.6		ching personnel, for each course, provide timely ective feedback to the students.			X
1.1.7		ry mechanisms, for the support of students and nmunication with the teaching personnel, are e.		Х	
1.1.8	Control	mechanisms for student performance are		X	
1.1.9		mechanisms for students with problematic ic performance are effective.		X	
1.1.10	effective and are	nic mentoring processes are transparent and e for undergraduate and postgraduate programs taken into consideration for the calculation of ic work load.	X		
1.1.11	•	gram of study applies an effective policy for the ion and detection of plagiarism.	X		
1.1.12	•	gram of study provides satisfactory mechanisms plaint management and for dispute resolution.		Х	
	•		 		

As the program is not running yet, it is not possible to comment on whether the various mechanisms above are effective, nor whether the regulations are adhered to in a consistent manner. However, the management team appear very competent and no problems in this regard are expected at this point.

Note, additionally:

α) the expected number of Cypriot and International Students in the program of study.

Initially up to 10, growing to 26 within 5 years

- $\beta) \,$  the countries of origin of the majority of students.
  - 50% Cypriot expected
- y) the maximum planned number of students per class-section.
  - Initially up to 10, growing to 26 within 5 years

1.2	Teachi	ng	1	2	3	4	5
1.2.1	achievir	thodology utilized in each course is suitable for ng the course's purpose and objectives and f the individual modules.					Х
1.2.2	The me	thodology of each course is suitable for adults.					Х
1.2.3		ous-formative assessment and feedback are d to the students regularly.					X
1.2.4		sessment system and criteria regarding student performance, are clear, adequate, and known to lents.					Х
1.2.5		onal activities which encourage students' active ation in the learning process, are implemented.					X
1.2.6	technolo	ng incorporates the use of modern educational ogies that are consistent with international ds, including a platform for the electronic support ing.					X
1.2.7	set by	ng materials (books, manuals, journals, ses, and teaching notes) meet the requirements the methodology of the program's individual and are updated regularly.					X
		er you have provided and note the additional cor andard / indicator.	nm	ents	s yo	u m	iay
1.3	Teachi	ng Personnel	1	2	3	4	5
1.3.1	exclusiv	mber of full-time academic personnel, occupied rely at the institution, and their fields of expertise, tely support the program of study.			X		
1.3.2	have the	embers of teaching personnel for each course e relevant formal and fundamental qualifications hing the course, as described by the legislation, g the following:					
	1.3.2.1	Subject specialization, preferably with a doctorate, in the discipline.					Х

1.3.2.2 Publications within the discipline.				X
The specializations of Visiting Professors adequately support the program of study.			X	
Special Teaching Personnel and Special Scientists have the necessary qualifications, adequate work experience and specialization to teach a limited number of courses in the program of study.				N/A
In every program of study the Special Teaching Personnel does not exceed 30% of the Teaching Research Personnel.				N/A
The teaching personnel of each private institution of tertiary education, to a percentage of at least 70%, has recognized academic qualification, by one level higher than that of the program of study in which he/she teaches.				X
In the program of study, the ratio of the number of courses taught by full-time personnel, occupied exclusively at the institution, to the number of courses taught by part-time personnel, ensures the quality of the program of study.				X
The ratio of the number of students to the total number of teaching personnel is adequate for the support and safeguarding of the program's quality.				X
The academic personnel's teaching load does not limit the conduct of research, writing, and contribution to the society.				X
Future redundancies / retirements, expected recruitment and promotions of academic personnel safeguard the unimpeded implementation of the program of study within a five-year span.				X
The program's Coordinator has the qualifications and experience to efficiently coordinate the program of study.				X
	The specializations of Visiting Professors adequately support the program of study.  Special Teaching Personnel and Special Scientists have the necessary qualifications, adequate work experience and specialization to teach a limited number of courses in the program of study.  In every program of study the Special Teaching Personnel does not exceed 30% of the Teaching Research Personnel.  The teaching personnel of each private institution of tertiary education, to a percentage of at least 70%, has recognized academic qualification, by one level higher than that of the program of study in which he/she teaches.  In the program of study, the ratio of the number of courses taught by full-time personnel, occupied exclusively at the institution, to the number of courses taught by part-time personnel, ensures the quality of the program of study.  The ratio of the number of students to the total number of teaching personnel is adequate for the support and safeguarding of the program's quality.  The academic personnel's teaching load does not limit the conduct of research, writing, and contribution to the society.  Future redundancies / retirements, expected recruitment and promotions of academic personnel safeguard the unimpeded implementation of the program of study within a five-year span.  The program's Coordinator has the qualifications and experience to efficiently coordinate the program of	The specializations of Visiting Professors adequately support the program of study.  Special Teaching Personnel and Special Scientists have the necessary qualifications, adequate work experience and specialization to teach a limited number of courses in the program of study.  In every program of study the Special Teaching Personnel does not exceed 30% of the Teaching Research Personnel.  The teaching personnel of each private institution of tertiary education, to a percentage of at least 70%, has recognized academic qualification, by one level higher than that of the program of study in which he/she teaches.  In the program of study, the ratio of the number of courses taught by full-time personnel, occupied exclusively at the institution, to the number of courses taught by part-time personnel, ensures the quality of the program of study.  The ratio of the number of students to the total number of teaching personnel is adequate for the support and safeguarding of the program's quality.  The academic personnel's teaching load does not limit the conduct of research, writing, and contribution to the society.  Future redundancies / retirements, expected recruitment and promotions of academic personnel safeguard the unimpeded implementation of the program of study within a five-year span.  The program's Coordinator has the qualifications and experience to efficiently coordinate the program of	The specializations of Visiting Professors adequately support the program of study.  Special Teaching Personnel and Special Scientists have the necessary qualifications, adequate work experience and specialization to teach a limited number of courses in the program of study.  In every program of study the Special Teaching Personnel does not exceed 30% of the Teaching Research Personnel.  The teaching personnel of each private institution of tertiary education, to a percentage of at least 70%, has recognized academic qualification, by one level higher than that of the program of study in which he/she teaches.  In the program of study, the ratio of the number of courses taught by full-time personnel, occupied exclusively at the institution, to the number of courses taught by part-time personnel, ensures the quality of the program of study.  The ratio of the number of students to the total number of teaching personnel is adequate for the support and safeguarding of the program's quality.  The academic personnel's teaching load does not limit the conduct of research, writing, and contribution to the society.  Future redundancies / retirements, expected recruitment and promotions of academic personnel safeguard the unimpeded implementation of the program of study within a five-year span.  The program's Coordinator has the qualifications and experience to efficiently coordinate the program of	The specializations of Visiting Professors adequately support the program of study.  Special Teaching Personnel and Special Scientists have the necessary qualifications, adequate work experience and specialization to teach a limited number of courses in the program of study.  In every program of study the Special Teaching Personnel does not exceed 30% of the Teaching Research Personnel.  The teaching personnel of each private institution of tertiary education, to a percentage of at least 70%, has recognized academic qualification, by one level higher than that of the program of study in which he/she teaches.  In the program of study, the ratio of the number of courses taught by full-time personnel, occupied exclusively at the institution, to the number of courses taught by part-time personnel, ensures the quality of the program of study.  The ratio of the number of students to the total number of teaching personnel is adequate for the support and safeguarding of the program's quality.  The academic personnel's teaching load does not limit the conduct of research, writing, and contribution to the society.  Future redundancies / retirements, expected recruitment and promotions of academic personnel safeguard the unimpeded implementation of the program of study within a five-year span.  The program's Coordinator has the qualifications and experience to efficiently coordinate the program of

There is a shortage of personnel in the Data Science component of the program. The plan for Visiting Professors is unclear. However, we understand that there is a hiring plan in place to address this issue.

2. PROGRAM OF STUDY AND HIGHER EDUCATION QUALIFICATIONS									
2.1	Purpose and Objectives and learning outcomes of the Program of Study	1	2	3	4	5			
2.1.1	The purpose and objectives of the program of study are formulated in terms of expected learning outcomes and are consistent with the mission and the strategy of the institution.					X			
2.1.2	The purpose and objectives of the program and the learning outcomes are utilized as a guide for the design of the program of study.					Х			
2.1.3	The higher education qualification and the program of study, conform to the provisions of their corresponding Professional and Vocational Bodies for the purpose of registration to these bodies.					N/A			
2.1.4	The program's content, the methods of assessment, the teaching materials and the equipment, lead to the achievement of the program's purpose and objectives and ensure the expected learning outcomes.					Х			
2.1.5	The expected learning outcomes of the program are known to the students and to the members of the academic and teaching personnel.					X			
2.1.6	The learning process is properly designed to achieve the expected learning outcomes.					Х			
2.1.7	The higher education qualification awarded to the students, corresponds to the purpose and objectives and the learning outcomes of the program.					X			

Professional bodies do not play a large role in computer science careers, hence we have marked question 2.1.3 as N/A

2.2	Structure and Content of the Program of Study	1	2	3	4	5
2.2.1	The course curricula clearly define the expected learning outcomes, the content, the teaching and learning approaches and the method of assessing student performance.					X

2.2.2	The European Credit Transfer System (ECTS) is applied and there is true correspondence between credits and workload per course and per semester for the student either he / she studies in a specific program or he/she is registered and studies simultaneously in additional programs of studies according to the European practice in higher education institutions.	X			
2.2.3	The program of study is structured in a consistent manner and in sequence, so that concepts operating as preconditions precede the teaching of other, more complex and cognitively more demanding, concepts.	X			
2.2.4	The higher education qualification awarded, the learning outcomes and the content of the program are consistent.			X	
2.2.5	The program, in addition to the courses focusing on the specific discipline, includes an adequate number of general education courses.			X	
2.2.6	The content of courses and modules, and the corresponding educational activities are suitable for achieving the desired learning outcomes with regards to the knowledge, skills, and abilities which should be acquired by students.		X		
2.2.7	The number and the content of the program's courses are sufficient for the achievement of learning outcomes.		X		
2.2.8	The content of the program's courses reflects the latest achievements / developments in science, arts, research and technology.				X
2.2.9	Flexible options / adaptable to the personal needs or to the needs of students with special needs, are provided.				X

The 10 ECTS courses seem light in term of student contact hours. We propose that contact hours are increased by at least 1 hour per week for each 10 ECTS course. Alternatively, or in addition, splitting some of the courses into two separate 5 ECTS courses can be considered. There is a significant overlap between some courses. On the other hand, some foundational topics are missing from the program, on the Data Science side.

Note the expected number of students who will be studying simultaneously at another academic institution, based on your experience so far, regarding students who study simultaneously in the programs of your institution.

# Some students are expected from University of Cyprus. We do not expect that this number will unbalance the program.

2.3	Quality	Assurance of the Program of Study	1	2	3	4	5
2.3.1		rangements regarding the program's quality ce define clear competencies and procedures.					X
2.3.2	•	ation in the processes of the system of quality ice of the program, is ensured for					
	2.3.2.1	the members of the academic personnel					X
	2.3.2.2	the members of the administrative personnel					Χ
	2.3.2.3	the students.					Χ
2.3.3	provide	de and / or the regulations for quality assurance, detailed information and data for the support nagement of the program of study.					X
2.3.4	•	ality assurance process constitutes an academic and it is not restricted by non-academic factors.					X

Justify the answer you have provided and note the additional comments you may have on each standard / indicator.

2.4	Management of the Program of Study	1	2	3	4	5
2.4.1	Effective management of the program of study with regard to its design, its approval, its monitoring and its review, is in place.					X
2.4.2	It is ensured that learning outcomes may be achieved within the specified timeframe.					X
2.4.3	It is ensured that the program's management and development process is an academic process which operates without any non-academic interventions.					X
2.4.4	The academic hierarchy of the institution, (Rector, Vice-Rectors, Deans, Chairs and Programs' Coordinators, academic personnel) have the sole responsibility for academic excellence and the development of the programs of study.					X

2.4.5		tion relating to the program of study are posted and include:		
	2.4.5.1	The provisions regarding unit credits		Х
	2.4.5.2	The expected learning outcomes		Х
	2.4.5.3	The methodology		Х
	2.4.5.4	Course descriptions		Х
	2.4.5.5	The program's structure		Х
	2.4.5.6	The admission requirements		Х
	2.4.5.7	The format and the procedures for student assessment		Х
2.4.6	accomp	ard of the higher education qualification is anied by the Diploma Supplement which is in the European and international standards.		X
2.4.7		ectiveness of the program's evaluation ism, by the students, is ensured.		X
2.4.8	studies			X

In the case of practical training, note:

- The number of credit units for courses and the number of credits for practical training
- In which semester does practical training takes place?
- Note if practical training is taking place in a country other than the home country of the institution which awards the higher education qualification

### Practical training is not applicable to the Master's in Simulation and Data Science

2.5	International Dimension of the Program of Study	1	2	3	4	5
2.5.1	The program's collaborations with other institutions are compared positively with corresponding collaborations					Χ

	of other departments / programs of study in Europe and internationally.			
2.5.2	The program attracts Visiting professors of recognized academic standing.		X	
2.5.3	Students participate in exchange programs.			Χ
2.5.4	The academic profile of the program of study is compatible with corresponding programs of study in Cyprus and internationally.			X

Also, comment on the degree the program compares positively with corresponding programs operating in Cyprus and abroad in higher education institutions of the same rank.

This is the first Simulation and Data Science master's program in Cyprus. The program is comparable to other similar programs offered in Europe.

2.6	Connection with the labor market and the society	1	2	3	4	5
2.6.1	The procedures applied, so that the program conforms to the scientific and professional activities of the graduates, are adequate and effective.					X
2.6.2	According to the feasibility study, indicators for the employability of graduates are satisfactory.					X
2.6.3	Benefits, for the society, deriving from the program are significant.					X

Justify the answer you have provided and note the additional comments you may have on each standard / indicator.

	3. RESEARCH WORK AND SYNERGIES WITH TEACH	HIN	G			
3.1	Research - Teaching Synergies	1	2	3	4	5
3.1.1	It is ensured that teaching and learning have been adequately enlightened by research.					X

3.1.2	New research results are embodied in the content of the program of study.	X
3.1.3	Adequate and sufficient facilities and equipment are provided to support the research component of the program of study, which are available and accessible to the personnel and the students.	X
3.1.4	The results of the academic personnel's research activity are published in international journals with the peer-reviewing system, in international conferences, conference minutes, publications etc.	X
3.1.5	External, non-governmental, funding for the academic personnel's research activities, is compared positively to the funding of other institutions in Cyprus and abroad.	X
3.1.6	Internal funding, of the academic personnel's research activities, is compared positively to the funding of other institutions in Cyprus and abroad.	X
3.1.7	The policy for, indirect or direct, internal funding of the academic personnel's research activity is satisfactory.	X
3.1.8	The participation of students, academic, teaching and administrative personnel of the program in research activities and projects is satisfactory.	X
3.1.9	Student training in the research process is sufficient.	X

# 4. ADMINISTRATION SERVICES, STUDENT WELFARE AND SUPPORT OF TEACHING WORK

4.1	Administrative Mechanisms	1	2	3	4	5
4.1.1	There is a Student Welfare Service that supports students with regards to academic and personal problems and difficulties.					Х
4.1.2	Statutory administrative mechanisms for monitoring and supporting students are sufficient.					Х
4.1.3	The efficiency of these mechanisms is assessed on the basis of specific criteria.					Х

4.2	Infrastructure / Support	1	2	3	4	5
4.2.1	There are suitable books and reputable journals supporting the program.				X	
4.2.2	There is a supportive internal communication platform.				Χ	
4.2.3	The facilities are adequate in number and size.					Χ
4.2.4	The equipment used in teaching and learning (laboratory and electronic equipment, consumables etc) are quantitatively and qualitatively adequate.					X
4.2.5	Teaching materials (books, manuals, scientific journals, databases) are adequate and accessible to students.					X
4.2.6	Teaching materials (books, manuals, scientific journals, databases) are updated regularly with the most recent publications.					X
4.2.7	The teaching personnel are provided with training opportunities in teaching method, in adult education, and in new technologies on the basis of a structured learning framework.					X

Justify the answer you have provided and note the additional comments you may have on each standard / indicator.

4.3	Financial Resources	1	2	3	4	5
4.3.1	The management and allocation of the financial resources of the program of study, allow for the development of the program and of the academic / teaching personnel.					Х
4.3.2	The allocation of financial resources as regards to academic matters, is the responsibility of the relevant academic departments.					Х
4.3.3	The remuneration of academic and other personnel is analogous to the remuneration of academic and other personnel of the respective institutions in Cyprus.					X

4.3.4 Student tuition and fees are consistent to the tuition and fees of other respective institutions.
---

The fess is on the high end of the spectrum in comparison to other programs. It is unclear whether the fees are justified given the projected profits after year 3. More significant aid (in terms of scholarships) should be considered.

## The following criterion applies additionally for distance learning programs of study.

5.	DISTANCE LEARNING PROGRAMS	1	2	3	4	5
5.1	Feedback processes for teaching personnel with regards to the evaluation of their teaching work, by the students, are satisfactory.					
5.2	The process and the conditions for the recruitment of academic / teaching personnel, ensure that candidates have the necessary skills and experience for long distance education.					
5.3	Through established procedures, appropriate training, guidance and support, are provided to teaching personnel, to enable it to efficiently support the educational process.					
5.4	Student performance monitoring mechanisms are satisfactory.					
5.5	Adequate mentoring by the teaching personnel, is provided to students, through established procedures.					
5.6	The unimpeded long distance communication between the teaching personnel and the students, is ensured to a satisfactory degree.					
5.7	Assessment consistency, its equivalent application to all students, and the compliance with predefined procedures, are ensured.					

5.8	Teaching materials (books, manuals, scientific journals, databases) comply with the requirements provided by the long distance education methodology and are updated regularly.			
5.9	The program of study has the appropriate and adequate infrastructure for the support of learning.			
5.10	The supporting infrastructures are easily accessible.			
5.11	Students are informed and trained with regards to the available educational infrastructure.			
5.12	The procedures for systematic control and improvement of the supportive services are regular and effective.			
5.13	Infrastructure for distance education is comparable to university infrastructure in the European Union and internationally.			
5.14	Electronic library services are provided according to international practice in order to support the needs of the students and of the teaching personnel.			
5.15	The students and the teaching personnel have access to the necessary electronic sources of information, relevant to the program, the level, and the method of teaching.			
5.16	The percentage of teaching personnel who holds a doctorate, in a program of study which is offered long distance, is not less than 75%.			

If the following apply, note " $\sqrt{}$ "in the appropriate space next to each statement. In case the following statements do not apply, note what is applicable:

The maximum number of students per class-section, should not exceed 30 students.	
The conduct of written examinations with the physical presence of the students, under the supervision of the institution or under the supervision of reliable agencies which operate in the countries of the students, is compulsory.	

The number of long distance classes taught by the academic personnel does not exceed the number of courses taught by the teaching personnel in conventional programs of study.			

#### The following criterion applies additionally for doctoral programs of study.

6.	DOCTORAL PROGRAMS OF STUDY	1	2	3	4	5
6.1	The provision of quality doctoral studies is ensured through Doctoral Studies Regulations.					
6.2	The structure and the content of a doctoral program of study are satisfactory and they ensure the quality provision of doctoral studies.					
6.3	The number of academic personnel, which is going to support the doctoral program of study, is adequate.					
6.4	The doctoral studies' supervisors have the necessary academic qualifications and experience for the supervision of the specific dissertations.					
6.5	The degree of accessibility of all interested parties to the Doctoral Studies Regulations is satisfactory.					
6.6	The number of doctoral students, under the supervision of a member of the academic personnel, is apt for the continuous and effective feedback provided to the students and it complies with the European and international standards.					
6.7	The research interests of academic advisors and supervisors are satisfactory and they adequately cover the					

	thematic areas of research conducted by the doctoral students of the program.					
Justify the answer you have provided and note the additional comments you may have on each standard / indicator.						
Note the number of doctoral students under the supervision of each member of the academic personnel of the program and the academic rank of the supervisor.					ne	

#### FINAL REMARKS - SUGGESTIONS

Please note your final remarks and suggestions for the program of study and/or regarding particular aspects of the program.

Our remarks and suggestions are given at the end of document 300.1.1

## Names and Signatures of the Chair and the Members of the External Evaluation Committee:

Name:	Signature:
Prof. Thomas Gärtner	
Assoc. Prof. Neil Hurley	
Professor Ioannis Emiris	
Georgios Tertytchny	

Date: 27 March 2018

 $300\_1\_1\_$  External Evaluation Report.docx