

Doc. 300.1.2

Date: May 23, 2019

# Higher Education Institution's response

- **Higher education institution:**

European University Cyprus

- **Town:** Nicosia

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

**In Greek:** «Βιολογία του Καρκίνου», 90 ECTS, 18 μήνες, (Μεταπτυχιακό)

**In English:** "Cancer Biology", 90 ECTS, 18 months (Master of Science)

- **Language of instruction:** English

- **Programme's status**

- **New program:**
- **Currently operating:** .....

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 and 2016” [N. 136 (I)/2015 and N. 47(I)/2016].

#### A. Guidelines on content and structure of the report

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

The School of Sciences of European University Cyprus wishes to express its sincere gratitude to the *External Evaluation Committee (EEC)* for the evaluation of the postgraduate programme Cancer Biology (MSc).

It is with great pleasure that we noted the positive feedback of the *EEC* and we appreciate its insightful recommendations, which provided us the opportunity to further improve the quality and implementation of the programme. In the following pages we respond in detail to all recommendations for improvement suggested by the *EEC* and we provide all relevant information to explain the actions taken to ensure that the proposed Program is of high quality.

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

### Comments by the EEC:

#### Findings:

The European University Cyprus (EUC) is a comprehensive private university teaching a wide variety of topics. There are 6200 students of them 25% are MSc students and 2% PhD students. Relevant to the current proposal the University has a undergraduate program in biology, a school of Medicine and Dentistry and a strong computer sciences department including a Microsoft innovation center. Currently there is no MSc or PhD program in the faculty of life sciences.

#### Strengths:

1. The University is an established teaching facility with a large number of MSc students in other areas. Thus, there is significant experience in all issues regarding education of graduate students
2. The proposed program is an international program that will be taught in English
3. The acting Dean and the rest of the faculty are young, ambitious and enthusiastic. They have excellent training from superb research groups worldwide. They achieved quite a bit in building the infrastructure for the proposed program
4. Talking with the vice-rector we were impressed that the University is highly committed to this program
5. The area of the proposed program, Cancer Biology, is an area with high added value in biomedical research. Its scope is wide thus potentially allowing integration with multiple areas beyond basic biology – for example bioinformatics imaging etc. Thus, the choice of this specific topic for the first MSc program in life sciences has the potential with integration with other leading activities of the University. Furthermore, it may encourage additional faculty for joining the University
6. EUC has extensive undergraduate education program in sciences. Therefore, there is a larger reservoir of students that may continue to MSc, if such a program would exist.
7. The teaching courses are well thought and well planned
8. Strong collaborators from outside the University

#### Areas of improvement and recommendations

1. This is a very ambitious program which is, of course, excellent. However, we are concerned that the number of faculty members who are active scientists and the relative limited laboratory space may not be compatible with a steady state of 30 MSc students (15 per year). Hence, we have the following recommendations:
  - a. We recommend accepting only 10 students per year in the first two years
  - b. In the frontal courses (compulsory or elective) to allow participation of students outside the program, for example excellent students from the last year of the undergraduate program. This will increase the number of students in the courses (compensating for the lower acceptance to the MSc program during the first 2-3 years) and create a “pool” of optional future students

- c. Prepare a list of potential Master Thesis research projects and the specific instructors for the first year and publish them on the website. This will assist in specific planning of the program and also will attract students
  - d. To enhance the potential faculty – enhance collaborations with other faculties within and outside the university.
2. There are no clear criteria for admission. There is a need for at least to determine the lower threshold for acceptance

**Response by EUC:**

**Regarding the Committee's recommendations and suggested areas for improvements:**

1. *a. We understand the Committee's concerns and its suggestion for having a lower number of students accepted during the first two (2) years. We have carefully considered this issue and we would like to express our belief that accepting 15 students per year would be a reasonable and manageable number. The reasons are summarized as follows:*
  - (i) *Given the structure of the proposed program of study (1<sup>st</sup> semester: preparation of thesis proposal, 2<sup>nd</sup> + 3<sup>rd</sup> semesters: lab work), there will be a maximum of only 15 students working in the lab simultaneously even when the program reaches a steady-state after 2-3 years. For example, students who will be admitted to the program in Fall 2019 will perform their thesis lab work during Spring 2020 and Fall 2020 and are expected to graduate by the end of Fall 2020. On the other hand, students who will be admitted in Fall 2020 will not start their thesis lab work until Spring 2021. This will happen every year, thus we believe that our current dedicated research lab space (which accommodates up to 18 students) along with the supporting space of the Molecular and Cell Biology teaching/research lab (which accommodates a total of 18 students, including at least 3-4 researchers) will be sufficient for a maximum of 15 students to perform their thesis lab work. Of course, the University is committed to further expanding our dedicated research laboratories, as proposed by the Committee, in order to further support this program and enhance our research output.*
  - (ii) *Moreover, given the nature of some of the courses in the proposed program, which include bioinformatics and systems biology approaches to study cancer, we expect that at least 2-3 thesis research topics will be computational-based (for example, please see relevant topics by Dr. Zaravinos, Dr. Polycarpou and Dr. Stephanou in Appendix I). Therefore, these students will not have to work in the lab for their thesis projects.*
  - (iii) *As explained during the on-site meeting with the Committee, our goal is to provide the option to 2-3 MSc students per year to perform their thesis lab work in the laboratories of one of our four (4) Visiting Professors in this program (Dr. Tsitsilonis, Dr. Trougkos – University of Athens, Dr. Vlahou – Bioacademy of Athens and Dr. Sotiropoulou – University of Patras). All student travel and accommodation could be covered through the European Erasmus+ program. We thus believe that this will significantly strengthen our program since students will be exposed to new and cutting-edge research environments and at the same time this will also reduce the number of*

- students that will have to perform their thesis work in the premises of EUC laboratories.*
- (iv) Like with most post-graduate programs at EUC, there might be a small attrition rate of 5-10%, therefore it may be possible that 1-2 of the accepted students will withdraw from their studies. This meaning, each cohort might end with 8-9 students.*
  - (v) Moreover, if only 10 students are being accepted every year, the elective courses offered during the second semester will have very small audiences which will deviate much more from the relevant provisions of the regulations of the National Quality Assurance and Accreditation Agency.*
  - (vi) We also agree, though, that we should be able to provide 30 Master thesis topics (15 for the Fall 2019 + 15 for the Fall 2020 students) every Fall. We believe this is possible, as you can see in the list of topics provided below (please see Appendix I). Moreover, as mentioned during the on-site meeting, we would like to inform the Committee that we are in the process of hiring three (3) additional faculty in the department of Life Sciences (in the disciplines of Biomedical Sciences, Pharmacology and Medicinal Chemistry) who will provide add-on contribution with their expertise in the Cancer Biology MSc program. In addition, as the program progresses, we will expand the faculty from other Schools and departments in our University (Medicine, Computer Sciences) as well as the list of our Visiting Professors in order to further support our program. For example, as to the suggestion of the EEC, we have already planned the inclusion in the following additional Faculty as potential master thesis supervisors: Prof. Ioannis Patrikios (Prof. of Biochemistry), Dr. Ilias Nikas (Lecturer in Pathology/Cytopathology), Dr. Constantinos Michaelides (Lecturer in Histology/Pathology) from the Medical School, as well as Dr. Christos Dimopoulos (Assoc. Prof. in Decision Support/Medical Informatics) and Dr. Christodoulos Efstathiades (Lecturer in Big Data and Bioinformatics) from the Computer Science and Engineering Department. These faculty will support the program both in terms of teaching as well as research.*

*To summarize, based on the above reasons, we believe that accepting 15 students every year would result in around 10 students performing their wet-lab thesis work in the laboratories of EUC. This is essentially what the Committee is more concerned of and we are confident that for all the above reasons and provisions we will be able to guarantee this.*

*We hope that the External Evaluation Committee (EEC) will agree with the above justification. However, we would like to emphasize that EUC will respect and accept whichever will be the final recommendation by the EEC regarding the number of accepted students for the first 2 years.*

*b. We agree with the Committee that it is a very good suggestion to allow participation of excellent students from our relevant undergraduate programs (BSc Biological Sciences, BSc Biomedical Sciences) is some of the frontal taught courses of the MSc program, providing that this will be allowed by the regulations of the National Quality Assurance and Accreditation Agency.*

*c. As suggested by the Committee, we have already prepared a list of 33 potential Master Thesis topics along with the specific instructors (please see Appendix I).*

*Upon approval of this program, this list of topics will be published on our University website. We agree that this will assist in specific planning of the program and will also help attracting new students.*

*d. According to the Committee's suggestion, upon approval of the program we will definitely aim to enhance our existing research collaborations, both nationally and internationally, attract additional Visiting Professors and engage additional faculties from the School of Medicine and the Department of Computer Science and Engineering to further support the Cancer Biology (MSc) program. As mentioned above, we will include Dr. Ioannis Patrikios (Prof. of Biochemistry), Dr. Ilias Nikas (Lecturer in Pathology/Cytopathology), Dr. Constantinos Michaelides (Lecturer in Histology/Pathology) from the Medical School, and Dr. Christos Dimopoulos (Assoc. Prof. in Decision Support/Medical Informatics) and Dr. Christodoulos Efstathiades (Lecturer in Big Data and Bioinformatics) from the Computer Science and Engineering Department.*

- 2. As recommended, we have now modified the admission criteria to include the lower threshold for student acceptance, as described below. Please note that due to the variety of grading policies in different educational systems, only the most common ones are mentioned. In addition, the existing provision of an interview process, whenever this appears necessary, will facilitate and strengthen the admission procedure.*

*The revised admission criteria are shown below (changes marked with red):*

- *All applicants must have successfully completed a Biomedical Sciences or Health Sciences or Doctor of Medicine (M.D.) or Physical Sciences-related (with adequate Biology background)\* undergraduate degree from a recognized academic institution.*
- *Applicants should hold an undergraduate degree with a minimum G.P.A 2.5 or "Second Class Honours" (UK Universities) or "Very Good" (Greek or Cypriot Universities) or any other equivalent grade.*
- *Due to the fact that the official language of instruction, for the Cancer Biology MSc program, is English, proficiency in written and spoken English is absolutely required. Thus, students should provide documentation showing high level of English fluency (i.e. TOEFL score of at least 550 (213 computer-based, 79 internet-based), or English IGCSE with grade C or above, or IELTS with a score of 6.5 or above GCE examination grade of C or above)\*\*.*
- *The University reserves the right to conduct interviews of applicants to strengthen the selection process, when necessary.*

*\*In the event of inadequate Biology background, the Program Committee may request the applicant to complete Biology foundation course(s) currently offered in the Biomedical Sciences, BSc program (e.g. BMS111 Introduction to Human Biology, BMS124 Cell Biology, BMS213 Molecular Biology) prior to admission.*

*\*\*In the event in which such documentation is not available, applicants are obliged to take an English placement test and improve their language skills prior to admission.*

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

### Comments by the EEC:

#### Findings

(See comments above)

#### Strengths

(See comments above)

#### Areas of improvement and recommendations

(See above)

### **Response by EUC:**

*Please see our response in Section 1, above.*

## 3. Teaching Staff (ESG 1.5)

### Comments by the EEC:

#### Findings

See comments at the beginning. The EUC has a substantial experience in teaching.

#### Strengths

Enough excellent teachers for the frontal courses including visiting faculty from Cyprus and abroad. For example, the immunology/immunotherapy course will be lead by an outstanding scientist from University of Athens

#### Areas of improvement and recommendations

There are not enough faculty in with substantial ongoing research in EUC facilities. This can be overcome by including more collaborating/visiting faculty and other senior research faculty from the medical school and the computer sciences departments in EUC school of sciences.

This is important for guidance of MSc theses and by future recruitment of additional research faculty to EUC.

### **Response by EUC:**

*As explained above in Section 1, and based on the Committee's suggestion, we will definitely enhance our existing research collaborations, both nationally and internationally. In addition, in order to address the Committee's recommendation, we have already included five (5) additional faculty from the School of Medicine and the Department of Computer Science and Engineering as potential master thesis supervisors and we also plan to attract additional Visiting Professors from abroad to further support this Cancer Biology (MSc) program.*

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

##### Findings

There are still no students in this program.

##### Strengths

There is significant experience in the university with MSC students. Currently 1239 MSC students and 64 PhD students in the University.

##### Areas of improvement and recommendations

Clearer admission criteria including acceptance thresholds are required.

##### **Response by EUC:**

***We have now modified the admission criteria to include the lower threshold for student acceptance, as described above in section 1. Please note that due to the variety of grading policies in different educational systems, only the most common ones are mentioned. In addition, the existing provision of an interview process, whenever this appears necessary, will facilitate and strengthen the admission procedure.***

#### 5. Resources (ESG 1.6)

##### Findings

There is a substantial experience in teaching and all resources for teaching are available. Research facilities are new and space is limited

##### Strengths

There is a big investment for developing research resources

##### Areas of improvement and recommendations

Research space is insufficient for 30 (15X2) MSC students

##### **Response by EUC:**

***Based on the reasoning explained in detailed in section 1 above, we believe that accepting 15 students every year would result in around 10 students performing their wet-lab thesis work simultaneously in the laboratories of EUC, even when the program reaches as steady-state after 2-3 years. This is essentially what we understand the Committee suggests we secure, and therefore we are confident that 15 students will be a completely reasonable and manageable number of incoming students every year.***

***Despite this fact, the University is committed to further expanding our dedicated research laboratories, within the timeframe proposed by the Committee, in order to further support this program and enhance our research output.***

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

Not relevant



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

*Not relevant*

## 8. Additional for joint programmes (ALL ESG)

*Not relevant*

## B. Conclusions and final remarks

### Comments by the EEC:

This is an ambitious program that is highly likely to succeed. It will lead to training of future professional in an highly demanded field. It is also likely to serve as a basis for future PhDs in biomedical and life sciences sciences in EUC and other Cypriot universities.

Thus, our clear recommendation is to approve, in principle this program, subject to some modifications as detailed below:

- a. We recommend accepting only 10 students per year in the first two years
- b. In the frontal courses (compulsory or elective) to allow participation of students outside the program, for example excellent students from the last year of the undergraduate program. This will increase the number of students in the courses (compensating for the lower acceptance to the MSc program during the first 2-3 years) and create a "pool" of optional future students
- c. Prepare a list of potential Master Thesis research projects and the specific instructors for the first year and publish them on the website, This will assist in specific planning of the program and also will attract students
- d. Planning and building additional lab space that should be ready by the third year of the program when the number of students will reach a steady state of 30 (15X2).
- e. To enhance the potential faculty – enhance collaborations with other faculties within and outside the university.
- f. Clearer admission criteria with a defined acceptance threshold

### *Response by EUC:*

***We would like to thank the Committee for the positive and constructive comments, and for recommending the approval of this program.***

### ***Regarding the comments and proposed modifications:***

- a. ***In Section 1 above, we have provided detailed justification to support why we believe that accepting 15 students per year would be a reasonable and manageable number. Please refer to pages 3-4. We hope that the External Evaluation Committee (EEC) will agree with the above justification. However, we would like to emphasize that EUC will respect and accept whichever will be the final recommendation by the EEC regarding the number of accepted students for the first two (2) years.***

- As explained in Section 1 above, we will allow participation of excellent students from our relevant undergraduate programs (BSc Biological Sciences, BSc Biomedical Sciences) in some of the frontal taught courses of the MSc program, providing that this will be allowed by the regulations of the National Quality Assurance and Accreditation Agency.*
- b. As suggested by the Committee, we have already prepared a list of 33 potential Master Thesis topics along with the specific instructors (please see Appendix I). Upon approval of this program, this list of topics will be published on our University website for interested applicants and existing students to have access to them.*
  - c. Despite the fact that by accepting 15 students every year we expect that around 10 students will perform wet-lab research work simultaneously in our labs, as explained above, the University is committed to further expanding our dedicated research laboratories, within the timeframe proposed by the Committee, in order to further support this program and enhance our research output.*
  - d. As explained above, we have plans for enhancing our existing research collaborations, both nationally and internationally. In addition, following the Committee's recommendation, we have already engaged five (5) additional faculty from the School of Medicine and the Department of Computer Science and Engineering as potential master thesis supervisors (please see Sections 1 and 2 above). We also plan to attract additional Visiting Professors from abroad to further support the Cancer Biology (MSc) program.*
  - e. We have now modified the admission criteria to include the lower threshold for student acceptance, as described above in sections 1 and 4.*



**C. Higher Education Institution academic representatives**

<i>Name</i>	<i>Position</i>	<i>Signature</i>
<b>Dr. Panos Papageorgis</b>	Program Coordinator Acting Dean, School of Sciences	
<b>Dr. Sotiris Michaleas</b>	Chairperson, Department of Life Sciences	

Date: 23/05/2019

## Appendix I:

### List of Master Thesis topics:

1. Assessment of Activin A signaling inhibitors against breast cancer metastasis (Dr. Papageorgis P. – wet-lab research project)
2. The role of histone acetyltransferase NAA40 in sensitization of colorectal cancer cells to gemcitabine (Dr. Papageorgis P. – wet-lab research project)
3. Normalization of the tumor microenvironment using nanoparticle-encapsulated anti-fibrotic drugs to improve efficacy of chemotherapy (Dr. Papageorgis P. – wet-lab research project)
4. Isolation and characterization of metastatic GFP-expressing breast cancer cells from murine lungs using flow cytometry (Dr. Papageorgis P. – wet-lab research project)
5. Detection and characterization of dormant metastatic breast cancer cells from murine lungs using immunohistochemistry (Dr. Papageorgis P. – wet-lab research project)
6. Investigation of the link between mutation/neoepitope load, cancer drivers and kataegis with distinct cytolytic subgroups of colorectal cancer (Dr. Zaravinos A. - computational research project).
7. A Systems Biology approach to identify co-deregulated genes and their transcriptional regulators in distinct cytolytic subgroups of colorectal cancer (Dr. Zaravinos A. - computational research project).
8. Investigation of RNA editing in microRNA targeting in cancer (Dr. Zaravinos A. - wet lab-based research project).
9. Investigation of AID/APOBEC-mediated epigenetic changes in colorectal cancer (Dr. Zaravinos A. - wet lab research project).
10. Investigation of the gene-interaction networks and altered pathways that are formed within distinct cytolytic subgroups of colorectal cancer (Dr. Zaravinos A. - computational research project).
11. Identification of the molecular mechanism of Ras Suppressor-1 (RSU-1) in breast cancer cells with regard to basic cellular properties that promote metastasis (Dr. Gkretsi V. – wet-lab research project)
12. Study of the role of Ras Suppressor-1 (RSU-1) in cancer cell metastasis; comparison between colon cancer cell lines with normal and mutant Ras oncogene (Dr. Gkretsi V. – wet-lab research project)
13. Study of the role of Growth Differentiation Factor-15 in glioma cell metastasis (Dr. Gkretsi V. – wet-lab research project)
14. Study of the interplay between Ras Suppressor-1 (RSU-1) and Growth Differentiation Factor-15 in basic cellular properties of cancer cells (Dr. Gkretsi V. – wet-lab research project)
15. Investigation of the effect of estrogens and their metabolite 2 methoxyestradiol on the expression of genes found in focal adhesions of breast cancer cells (Dr. Gkretsi V. – wet-lab research project)

16. The efficacy of anti-PDL1-mediated immunotherapy treatment in mouse cancer models with proficient or deficient gut microbiota (Dr. Sophocleous A. – wet-lab research project)
17. The effects of probiotics on the efficacy of anti-PDL1 immunotherapy treatment in mouse cancer models in the presence or absence of intact microbiome (Dr. Sophocleous A. – wet-lab research project)
18. Application of motion correction algorithms in PET-CT or PET-MRI images from lung cancer patients to improve diagnostic accuracy (Dr. Polycarpou I. - computational research project).
  
19. Comparison of different brain tumor segmentation methodologies in MRI images for improvement of treatment management (Dr. Polycarpou I. - computational research project).
20. Molecular tests for IDH1, IDH2, MGMT, EGFR mutations, 1p and 19q deletions in pediatric tumors (Dr. Theodorou M. - wet-lab research project)
21. Molecular tests for IDH1, IDH2, MGMT, EGFR mutations, 1p and 19q deletions for the prognosis of brain tumors (Dr. Theodorou M. - wet-lab research project)
22. Evaluation of the biological effective dose (BED) of stereotactic radiotherapy protocols (Dr. Theodorou M./Dr. Polycarpou I. - wet-lab research project)
23. Evaluation of the biological effective dose (BED) in radiosurgery protocols (Dr. Theodorou M. - wet-lab research project)
24. Analysis of gene-environment interactions in thyroid cancer using association between lifestyle factors and gene expression of target genes (Dr. Demetris Lamnisis – epidemiological and wet-lab research project)
25. Evaluation of plasma biomarkers in cancer patients treated with immunogenic cell death-inducing drugs (Dr. Tsitsilonis R. – wet-lab research project)
26. Peripheral blood immune profiling of patients with multiple myeloma (Dr. Tsitsilonis R. – wet-lab research project)
27. Prediction of therapeutic targets and drug repurposing based on high resolution -omics datasets for the treatment of bladder cancer (Dr. Vlahou A. - computational research project).
28. Validation of biomarkers for bladder cancer via targeted proteomics mass spectrometry-based approaches (Dr. Vlahou A. – wet-lab research project).
29. Screening of natural products for the identification of novel bioactive molecules with tumor cells specific toxicity (Dr. Trougakos I. – wet-lab research project)
30. The impact of proteome instability in tumorigenesis (Dr. Trougakos I. – wet-lab research project)
31. Examining the Roles of Na<sup>+</sup>/K<sup>+</sup> ATPase (NKA) isoforms in Cancer via a Bioinformatic Approach (Dr. Stephanou A. - computational research project).
32. Examining the Roles SERCA isoforms in Cancer via a Bioinformatics Approach (Dr. Stephanou A. - computational research project).

**33. Cancer risks following diagnostic and therapeutic radiation exposure in children: A Meta-analysis approach (Dr. Mamais I. - computational research project).**