

Doc. 300.1.2

Date: Date.

## Higher Education Institution's Response

- Higher Education Institution:  
Cyprus University of Technology
- Town: Limassol
- Programme of study  
Name (Duration, ECTS, Cycle)

In Greek:

MSc στη Χημική Μηχανική με Κυκλική  
(Βιο)Οικονομία (18 μήες, 94 ECTS)

In English:

MSc in Chemical Engineering with Circular  
(Bio)Economy (18 months, 94 ECTS)

- Language(s) of instruction: English
- Programme's status: New
- Concentrations (if any):

In Greek: Κυκλική (Βιο)Οικονομία

In English: Circular (Bio)Economy



The present document has been prepared within the framework of the authority and competencies of the Cyprus Agency of Quality Assurance and Accreditation in Higher Education, according to the provisions of the “Quality Assurance and Accreditation of Higher Education and the Establishment and Operation of an Agency on Related Matters Laws” of 2015 to 2021 [\[L.136\(I\)/2015 – L.132\(I\)/2021\]](#).

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

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

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

Areas of improvement and recommendations by EEC	Actions Taken by the Institution	For Official Use ONLY
The name of the degree can benefit from a slight typographical change: "MSc in Chemical Engineering with Circular Bioeconomy" (remove parenthesis).	We fully agree with the proposition of the EEC and we will from now on name the degree as "MSc in Chemical Engineering with Circular Bioeconomy". Changes have occurred throughout the application and the online-programme application.	Choose level of compliance:
Formalizing the involvement of external stakeholders, including industry practitioners and regulatory bodies, in annual reviews and periodic evaluations could enhance the programme's alignment with industry advancements and job market demands. Establishing an Industrial Advisory Board to convene annually with a set agenda for curriculum reform may be beneficial.	We agree that establishing an Industrial Advisory Board will be to the benefit of this graduate programme. We also believe that such a Board will also be highly beneficial to the undergraduate programme. Thus, the Board to be established will be able to provide suggestions for curriculum reform at all levels. These annual meetings will be held, possibly, at the end of the Spring Semester, and we aim to invite companies that accept our undergraduate students for practical training (and MSc students for industrial placement), companies that provide monetary prizes for our undergraduate students, and companies with which we have research or other collaborations. The minutes of these meetings will be kept for future reference.	Choose level of compliance:
Some revisions to the programme design are suggested: Each semester should carry an equal workload of 30 ECTS, totalling 90 for the total programme. The first semester could include a course on process systems engineering—covering material and energy balances, key unit operations, and computer tools—rather than the current courses on advanced materials engineering and transport phenomena.	We agree with this. We have amended the programme design following the EEC's suggestions as follows (totaling 90 ECTS). The Advanced Transport Phenomena course has been substituted by a Process Systems Engineering course which includes introductory elements of mass and energy balances, unit operations, and basic knowledge of numerical analysis and the use of MATLAB	Choose level of compliance:

<p>Additionally, moving the course on life cycle assessment into the first semester would enhance the curriculum's appeal, application, coherence, and balance.</p>	<p>(please see the description of this new course in the attachment). Finally, the course CEN 503 (Advanced Materials Engineering and Technology) has been removed.</p>	
<p>The department has faced faculty and technical staff departures, but has developed a recruitment plan to restore staffing levels. It is anticipated that these efforts will result in a higher staff capacity compared to 2023, when previous evaluations of the department and its programmes were conducted.</p>	<p>We are happy to announce that two more faculty staff members will be added to the department. One will officially be employed in January 2025 (Dr. Nikola Evripidou, a BEng in Chemical Engineering from Imperial College London and a PhD degree from University College London), and the second has been offered a position to start in September 2025.</p>	<p>Choose level of compliance:</p>
<p>The feasibility of this new program was based on a questionnaire under 21 undergraduates and a market survey amongst 12 industries present at a MSc presentation May 23, 2023. The feasibility of attracting more distance and foreign learners (the university currently offers only two distance learning programme and has 8% of foreign students) was said to be based on personal expectations and not on any market needs analysis.</p>	<p>Although we had only asked from our own undergraduate students to fill-in the questionnaires, all of them were highly positive for the blended form of the MSc program. The same note was also made by the industries that were invited to participate in the MSc presentation that took place on May 23, 2023. The need for graduates with a Circular Economy background is in line with the obligations of companies in the EU to align with recent action plans the EU has announced. For example, the EU's Circular Economy Action Plan (2020), which is part of the European Green Deal, provides a roadmap for making the EU economy more sustainable by focusing on product design, production, consumption, and waste management. It promotes circular business models, where companies are encouraged to reuse, repair, and recycle products and materials rather than relying on a linear "take-make-dispose" model. The plan includes revising existing legislation to ensure that all packaging on the EU market is</p>	<p>Choose level of compliance:</p>

	<p>reusable or recyclable in an economically viable way by 2030, meaning that by 2030 the EU companies will have a legal obligation towards circular economy. Furthermore, the Waste Framework Directive (2008/98/EC) mandates that companies manage waste in a manner that safeguards human health and the environment by prioritizing waste prevention, reuse, recycling, recovery, and disposal in that order. Thus, companies operating in the EU must comply with these regulations, which could involve the implementation of internal recycling programs, and meeting specific recycling targets. Non-compliance can result in penalties. For this reason, it's essential for businesses to stay informed about the circular economic framework and its implementation.</p> <p>The CUT will promote the new program in several university exhibitions that participates in on an annual basis. Furthermore, the participation of CUT in the European University alliance EUT+ offers unique opportunities to attract MSc students from abroad (given the MSc programs blended format and the English as a teaching language). Finally, we plan to use the Chemical Engineering Department's social media platforms (such as Facebook, and LinkedIn) to further advertise the new MSc program.</p>	
<p>The EEC feels that face-to-face education would be the most adequate modality to deliver this MSc programme. Nevertheless, the committee agrees with the need for online distance learning programme and proposes to enhance ways to achieve practical learning objectives (problem solving in practical</p>	<p>To enhance the ways to be used to achieve practical learning objectives, we have added in the description of courses CEN 501, CEN 502, CEN 601, and CEN 604 the use of Aspen Plus to practice problem-solving in practical contexts. Please see Annex 2 of the revised application form for changes. Regarding the utilization</p>	

<p>contexts). Furthermore, licenses for all utilised software in the programme need to be ensured for distance access.</p>	<p>of software by online students, we have already discussed this with the personnel responsible, Dr Christos Rodostenous, who told us that we could set up virtual desktops so that online students can access commercial software, such as Aspen Plus. Other software, such as MATLAB, is free to be downloaded by the students (and staff) using their CUT credentials (email and password).</p>	
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## 2. Student – centred learning, teaching and assessment (ESG 1.3)

Areas of improvement and recommendations <b>by EEC</b>	Actions Taken by the Institution	For Official Use ONLY
The EEC was worried about the 94 ECTS in 18 months study load. We suggest to bring this down to three semesters of 30 ECTS each. Furthermore we strongly recommend to offer a part-time variant of 6 semesters, especially taking into account the CUT wants to attract distant learners that might be older, already work and have families.	As discussed above, the program has been amended to a 90 ECTS programme (30 ECTS in each semester). During applications, potential students will be allowed to inform us whether they prefer to be enrolled on a full- (3 semesters) or part-time (6 semesters) basis. Please note that the maximum period of study for completing an MSc degree is 8 academic semesters.	Choose level of compliance:
During the site visit, it was proposed that there would be an increasing complexity in knowledge and skills across the three semesters. This is not reflected in the paperwork. The courses are still rather 'stand alone'. It is not clear how they build upon each other nor how all required competence areas of the European Quality Framework (Dublin descriptors) are distributed over the courses. Nevertheless, during the site visit the committee heard intentions and ideas to align courses and include missing competences, distribute research competences across courses, put the LCA course earlier in the program, and introduce more innovative instruction formats. This needs to be worked out and made more explicit. Some innovative approaches presented by staff made us more confident that more will be achieved than what the application on paper suggests.	We have included the Life Cycle Assessment (LCA) course (CEN 601) in the first semester. Also, according to the EEC's well-posed recommendations, we removed the Advanced Transport Phenomena course (CEN 501) and have included a more basic Process Systems Engineering course in its place. We have added more information regarding how the second-semester courses build upon the first-semester ones: CEN 501 and CEN 502 provide the necessary knowledge regarding important Chemical Engineering processes (Mass and Energy Balances and Unit Operations taught in CEN 501, and Reaction Engineering and Biochemical Engineering taught in CEN 502), which is necessary for teaching CEN 602 (Circular Biomaterial) and CEN 603 (Renewable Fuel Production Processes). Furthermore, the LCA course (CEN 601) will present a more simplified LCA-based design project, which will be extended to a more complicated design project in CEN 604. Finally, the three first-semester courses will include simple Aspen Plus modeling tools, thus introducing the	Choose level of compliance:



	students to Aspen modeling; this knowledge will be needed by students during the design project using Aspen Plus. Finally, we included a comment regarding the fact that the use of assignments and research-based projects to assess the students' knowledge, skills, and competencies is as per the Dublin Descriptors for a second cycle of qualifications. Also, the research component of the projects aims to enhance students' ability to conduct independent investigations.	
Unique selling points the new program can harvest on are linking to PhD programs, industry input, strong research outputs of staff, part-time variant for distant learners.	We agree and will include these points in the description of the new MSc program.	Choose level of compliance:
It is expected there can be sufficient interaction between the students and the teacher in a course. Students are expected to collaborate with each other and be facilitated by more varied educational technology. An intended example will be the demonstrated use of simulations using the LearnChemE application. Again, this would require some advance collaboration scripting of the online environment.	We have improved the description of the educational tools to be used in the description of CEN 501 and CEN 502.	Choose level of compliance:

### 3. Teaching staff (ESG 1.5)

Areas of improvement and recommendations <b>by EEC</b>	Actions Taken by the Institution	For Official Use ONLY
Currently, the number of teaching staff consists of 11 members, which is below the expected target of around 14, which existed between 2019 to 2022. Nevertheless, this number is expected to increase soon, as there are 6 new appointments for faculty members scheduled to start before the end of 2025. It is recommended that this target should be always maintained.	As mentioned before, one faculty member has been employed in January 2025 and the second has been offered a position to start in September 2025. We expect that at least two more faculty members will be employed before the start of the MSc programme.	Choose level of compliance:
Teaching performance does not affect evaluation of a faculty member. This is due to the policy imposed throughout the University (probably in accord with the ministry of Education in Cyprus). The members of the committee recommend including teaching performance in the evaluation of a faculty member.	This is a central strategy of the University as a whole and not of a particular academic department. We will inform the University to undertake corrective measures.	Choose level of compliance:
The teaching performance is assessed by a simple questionnaire completed by all the students, without giving the opportunity to describe in more detail the pros and cons of a certain course instructor. Since this is a procedure imposed by the University the members of the committee recommend improving the questionnaire to include argumentative feedback by the students for each course.	As this is a university strategy, we cannot modify it only propose its modification. We will inform the University to undertake corrective measures. If the University does not make such modifications, we plan to ask students to fill in questionnaires, anonymously, that we will make to assess the teaching performance of each course. We have recently asked our undergraduate alumni and 4th-year students to fill in a similar questionnaire requesting their feedback regarding the undergraduate program the department has been offering since 2017.	Choose level of compliance:

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

Areas of improvement and recommendations by EEC	Actions Taken by the Institution	For Official Use ONLY
Admission to the MSc programme is open for graduates in various disciplines including e.g. natural sciences, which can cause difficulties in some students following some of the advanced courses in Chemical Engineering. Appropriate mechanisms to support the smooth transition of such students in the new discipline need to be in place. Such mechanisms can for example be through the online learning management system (Moodle) offering a compilation of resources (e.g. video tutorials, LearnChemE resources, etc.) to get familiarized with the pre-requisites of each course, and/or the requirement to follow some relevant courses offered by the department in other degrees.	As mentioned above, we have removed the “advanced” from all core courses. Also, as per the EEC’s well-posed recommendations, we removed the Advanced Transport Phenomena course (CEN 501) and have included in its place a more basic Process Systems Engineering course. This will allow non-Chemical Engineers to follow the core courses more easily. To further support their smooth transition in our MSc program, we aim to make available to them a selection of the most important chapters of the core courses taught in the undergraduate programme dealing with CEN 501 (CEN 206 Mass and Energy Balance, CEN 209 and 327 Unit Operations I and II, and CEN 301 Dynamic Simulation with the Use of Computers) and CEN 502 (CEN 201 Chemical Reaction Engineering, and CEN 211 Biochemical Processes). In case of questions, the teaching staff of the respective courses will answer them in online meetings.	Choose level of compliance:
The course evaluations, offering the opportunity for the students to give feedback at the end of each course, need to allow the input of comments by the students, and not just being based on a simple numerical grading system, to ensure the appropriate argumentation of the students’ experiences in the courses and support the continuous course improvement.	See our response to the last comment of Sec. 4.	Choose level of compliance:

## 5. Learning resources and student support

(ESG 1.6)

Areas of improvement and recommendations <b>by EEC</b>	Actions Taken by the Institution	For Official Use ONLY
In respect to controlling for plagiarism and fraud we recommend looking for DL improvements, taking in account recent technologies (pattern/handwriting/iris recognition) and proctoring during exams.	We asked whether the University intends to invest in buying proctoring software to conduct online examinations. Since the demand within the CUT for online examinations is limited, we were informed that there is no such intention. As such, we have decided to remove all examinations and use projects or assignments to make students' assessments.	Choose level of compliance:
To address the concerns, we have for the DL to support the desired competences, a real e-learning unit should contain more substantial and more dedicated expertise for instructional methods and interactive e-learning, to design and develop a more active and experiential program, needed to achieve some of the higher order competences in HE (see other comments). It appears recently new staff with more ICT and innovation affinity has been contracted, but this is an ongoing process.	As the online unit is a university unit, we will forward this demand to the person responsible.	Choose level of compliance:
There is an investment need of about M6,8 EUR for materials, which is being paid for from tuition fees (70%) and external funding (30%). A yearly intuition of EUR 4100 seems low for such a program that leans that heavily on small-scale supervision and high-cost materials. The role of the technical laboratory technician(s) therefore seems important, but at the same time undervalued. The current laboratory technician is leaving and seems to be replaced by (temporary) student-assistants.	We agree with the EEC's comment. Currently, we have hired four (4) part-time laboratory technicians to fill in the void formed by the resignation of our technical laboratory technician. Please be informed that the procedure for hiring a new permanent (full-time) technical laboratory technician has already commenced. Unfortunately, this may be time-consuming since the University has requested permission from the Ministry to announce the vacancy.	Choose level of compliance:

We recommend to re-evaluate this/these staff positions.		
Harvest more on the experience and cases that the work field (industry and professional bodies) can offer as content to the program. It became clear from our discussion with the work field that current graduated students have much knowledge, but still are not thinking as engineers in more practical ways (be creative, solve problems in context). A more interdisciplinary view (not only focusing on technical, but also on juridical, economic and political issues, would be welcomed by the work field and committee (if not now possibly later).	We will in future amendments of the MSc program add additional courses of more general knowledge, such as economics, that our students can select from other MSc programs offered by other departments of CUT.	Choose level of compliance:
We recommend that (especially at this early stage of e-learning awareness of the CUT) that all staff follow mandatory the induction training on new teaching methodologies, and that it is not optional for existing staff.	New faculty members must complete this two-semester induction training upon their employment at CUT. Dr Achilleas Konstantinou has a certificate of Higher Education (from the Institute of Education, UK) and will not need to undertake such training. However, this induction training is intended to cover general topics on teaching methodologies without particular attention to e-learning methodologies. For this reason, we have asked the e-learning unit of the University to prepare a course on new teaching methodologies for courses delivered online. The unit has agreed to prepare such a course. All staff members that will teach in the MSc program will enroll on this course before the launch of the program to get more familiar with the more up-to-date e-learning teaching methodologies.	Choose level of compliance:
The current status for providing support for students facing personal challenges (class, family, economic, health-related), is available but not well communicated to the students.	We will inform the Studies and Student Affairs administration service to improve their communication of such important matters to the students. We also must say that we will urge, we already do so to our ungraduated	

The EEC recommends improving this.	students, the students to come and discuss such matters with the teaching staff that they trust in case the administration services are unresponsive.	
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## 6. Additional for doctoral programmes (ALL ESG)

Areas of improvement and recommendations <b>by EEC</b>	Actions Taken by the Institution	For Official Use ONLY
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## 7. Eligibility (Joint programme) (ALL ESG)

Areas of improvement and recommendations <b>by EEC</b>	Actions Taken by the Institution	For Official Use ONLY
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## B. Conclusions and final remarks

Conclusions and final remarks by EEC	Actions Taken by the Institution	For Official Use ONLY
We were confident that the overall Quality Assurance mechanisms, at the institutional level are in place that will help deliver this new programme. However, there are specific demands that also come with offering such a technical and highly applied program that include the recruitment of students who will be suitable for following the programme, the recruitment of industry for placements, the placement of students who are not already engineers in industry, the ongoing monitoring of the practical components including how staff professionalisation and related concerns are dealt with.	Please see our responses to your comments in the previous sections.	Choose level of compliance:
As noted above, we see challenges that need to be improved, and we therefore flag these as areas that were assessed as partially compliant - and thus need further attention leading to the overall improvement of the proposed MSc programme.	We believe that the amendments undertaken, as per the EEC's comments and insightful suggestions, have improved the MSc programme to its totality.	Choose level of compliance:

C.

#### D. Higher Education Institution academic representatives

<i>Name</i>	<i>Position</i>	<i>Signature</i>
<b>Michalis Koutinas</b>	Associate Professor, Department Head	
<b>Ioannis Vyrides</b>	Associate Professor	
<b>Pavlos Stephanou</b>	Associate Professor	
Click to enter Name	Click to enter Position	
Click to enter Name	Click to enter Position	
Click to enter Name	Click to enter Position	

**Date:** 30 January 2025

