Doc. 300.1.2

Higher Education Institution's Response

Date: 22 August, 2023

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

  In Greek:

  Μάστερ σε Φυσικό Αέριο στην Ενεργειακή Μετάβαση

  In English:

  Master on Natural Gas in Energy Transition
- **Language(s) of instruction: English**
- **Programme's status:** Currently operating
- **Concentrations (if any):**

  In Greek: Concentrations
  In English: Concentrations

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

A. 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 2nd 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
Lack of standalone PVT	We recognize the importance of pressure-volume-temperature (PVT) material. However, for a standalone course, another course must be removed from the curriculum. The PVT material is taught as chapters in three different courses: NGE 521: Introduction to Natural Gas (pages 115-133 of textbook Hydrocarbon Exploration and Production, F. Jahn, M. Cook, M. Graham, Elsevier, 2011), NGE 532: Natural Gas Production Engineering (pages 9-33 of textbook Advanced Natural Gas, Engineering, X. Wang, M. Economides, Gulf Publishing Company, 2009, Houston) and NGE 531: Reservoir Engineering, Ronald E. Terry, J. Brandon Rogers - Applied Petroleum Reservoir Engineering-Prentice Hall (2014)	
and project management courses in the course structure	We agree with the recommendation of strengthening of the project management teaching. Currently, the subject is covered within the NGE 522: Well and subsea completions and production facilities course and in the FDP. We propose to move the material on well completions to the modified rename course NGE 521: Well drilling and completion operations and add more project management material in the renamed course NGE522: Subsea completions, production facilities and project management. The changes are described in the attached proposal submitted to the relevant bodies of the University for approval.	Choose an item.
The geological courses seem to focus on the large (seismic -basin) scale. For petrophysical interpretation and rockphysics, the students also needs introduction to geology on the micrometer to cm scale, so that they understand porespace geometry, wettability and the role of diagenesis	The program comprises three courses related to Geology: NGE 511 - Petroleum Geology, NGE 512 - Applied Geophysics: Seismic Interpretation, and NGE 513 - Formation Evaluation. In both NGE 511 and NGE 513, geology is also introduced at a smaller scale. In NGE 511, students are specifically introduced to the fundamentals of stratigraphy and sedimentology. They learn how to recognize and classify different types of rocks in the field based on their characteristics. They also become familiar with various types of sedimentary environments. During their midterm exam, they are assessed on their understanding of different rock types based on their sedimentary characteristics. Furthermore, in the NGE 513 course, students visit the material characterization lab. In this context, concepts such as pore space geometry, wettability, and the role of diagenesis are visually	

	demonstrated through the use of modern equipment on cores and thin sections.	
Absence of a final year research project	The program Natural Gas in The Energy Transition belongs to the Meng programs offered by the Engineering School which are based on increased number of courses, it does not require research thesis but a final project. Research thesis is required by the MSc programs which are based on reduced number of courses. Again, to add an extra course on Research project another course must be removed. Research on new and advanced technologies is investigated within the FDP project; the last year's FDP which included innovative aspects was presented in a 2022 AGU conference.	Choose an item.
Insufficient energy transition elements in the program	We teach the background of energy transition in the NGE 501 with Energy Outlook. We also teach the Material Balance Equations (MBE) for CO_2 geological injection in depleted reservoirs in the NGE 531 Reservoir Engineering module in which the students conduct a project as part of their assessment elements. Further, with the recognition that the Natural Gas is the fuel in the energy transition, we agree with Committee's suggestion and we will add and teach additionally the following subjects: 1. Geomechanics of Geothermy Energy, CO_2 geological storage, underground hydrogen storage in the Course NGE 541: Petroleum Geomechanics 2. Reservoir engineering of CO2 Geological storage and Hydrogen subsurface storage in the Course NGE 531: Reservoir Engineering Both of the above subjects are research topics of the Group Geomechanics for Energy and the Environment. Prof. P. Papanastasiou and his co-workers have the competencies to teach them. The proposed additions are included in the attached relevant proposal for implementation.	Choose an item.
Lack of enough foundation courses for students coming from other backgrounds such as electrical engineering	We are aware of this potential issue with very limited number of students. We decided that whenever a student with gaps on relevant subjects needs help, the instructors will assist him/her with extra notes and tutoring hours. One of the recent students with Electrical Engineering background was 2nd in the ranking of students' performance.	Choose an item.
Click or tap here to enter text.	Click or tap here to enter text.	Choose an item.

2. Student – centred learning, teaching and assessment
(ESG 1.3)

Areas of improvement and recommendations **by EEC**	Actions Taken by the Institution	For official use Only
Limited access to software: To improve students' access to software tools like Aspen HYSYS and ANSYS	The Program has access and uses the Petrel software donated by SLB. The suite of Petrel programs includes all the modules required in the program from Seismic and log interpretation to Nodal analysis to Reservoir simulations (Eclipse). The proposed program Aspen HYSYS is a chemical process simulator used from unit operations to full chemical plants and refineries (downstream). These subjects are not in the core subjects of the program. The University of Cyprus has access to ANSYS which is used mostly for research.	Choose an item.
Lack of anonymous interim feedback	Other than the courses evaluation by the end of each semester, the program distributes an anonymous questionnaire at the end of the program. The results of this survey were presented to the Committee which praised the program for the honest presentation of the results. We will follow the suggestion of the Committee to collect additional anonymous interim feedback at the end of each semester.	Choose an item.
Encouraging innovative teaching methods and learning environments	The University of Cyprus supports different initiatives and tools for innovative teaching methods and innovative environments. One of the instructors of the program used recently in his class the Kahoot which is a game-based learning platform. Other initiatives include field visits for the geological courses and in-class workshops to enhance the learning process.	Choose an item.
Review and Scrutiny Process	We are aware that the proposed system of 'Review and Scrutiny Process' is a very characteristic and applied by UK universities but not by other countries e.g. European and USA. To apply such a system in Cyprus is even more difficult due to the small number of the universities and limited expertise on the subjects. Though, we recognize the advantages and usefulness of this system, it is a matter of the Ministry of Education and University Policies to apply it.	Choose an item.
Sample exam papers	Previous exam papers are posted in Blackboard with class notes and exercises solutions for some courses. We will make sure that samples for exam papers exist in the Blackboard for all the courses and inform the students accordingly to demand it.	Choose an item.
Design projects like FDP course: make sure that students are both assessed individually and as part of the group	The students are assessed individually in the FDP course. A prove for that is the student grades which are not uniform. Last year the FDP grades were spanning from 6 to 10.	

3. Teaching staff

(ESG 1.5)

Areas of improvement and recommendations **by EEC**	Actions Taken by the Institution	For official use Only
Lack of Full-time Staff with Petroleum Engineering Educational Background	It is fair to say that the recruiting of full-time Staff with Petroleum Engineering educational background will depend on the developments of the natural gas fields in the Exclusive Economic Zone which until now it was slow but there are some plans for developments of the fields soon. Currently, the country with no production of natural gas has limited income but once the income from sales of natural gas is a substantial proportion of the Cyprus GDP, it will be easier for the University to make a case for such full positions. Any gap that arises from the lack of staff with Petroleum Engineering educational background is covered well with instructors (five) with long experience in the oil industry. In addition, we will form an external three-member advisory committee composed of professors of petroleum engineering educational background for reviewing yearly the program making suggestions for improvement	Choose an item.
Limited Collaboration with Other Institutions in Cyprus	There is collaboration between the Institution in Cyprus, may be not to the degree expected by the Committee. There is an ongoing research collaboration between faculty members of the Universities, using common equipment and participation in Evaluation Committees etc. The experience shows that collaboration works better when it is initiated at the individual level and not when it is imposed by management with signing of MoU etc	Choose an item.
Innovative Teaching Methods and Teacher Training	The program Committee makes sure that all the instructors have teaching experience. It encourages modern and innovative students learning methods. In order to maintain and support the continuous improvement of teaching UCY has established since 2004 the Centre for Teaching and Learning (CTL). CTL organises a wide range of activities, such as seminars, training sessions, and lectures, to provide teaching training to new faculty members as well as continuous professional development for all teaching staff	Choose an item.
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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
The student SPE chapter was not so active in comparison with other institutions in Cyprus	In the year 2013-14 the University of Cyprus had an active SPE Chapter; special mentioned of its activities was published then by the JPT magazine. These activities were put on hold during the years that the program was not offered and there were no students. We are going to discuss again with the students if there are interested to revive the SPE chapter.	Choose an item.
The programme needs to be advertised to a wider community of the students	We agreed with the Committee and we are going to advertise actively the program to increase its visibility locally and internationally. The following actions are taken: 1. Maintain alive the web page of the program https://www.ucy.ac.cy/nge 2. Connect to social media. e.g. LinkedIn, Instagram, Facebook 3. The program agreed to an yearly fees of 500€ to be advertised by the Times Higher Education	Choose an item.
Gender balance and international diversity are low	There is an improvement in both gender balance and internationally diversity in this year admission. In the current academic year (2023-24) there are 2 female students and 2 international students out of 7 students compared to the last year's record (2022-23) where there was only 1 female and 0 international out of 6 students. We will continue improving this rate by advertising the program locally and internationally.	Choose an item.
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4. Learning resources and student support
(ESG 1.6)

Areas of improvement and recommendations **by EEC**	Actions Taken by the Institution	For official use Only
More software packages and lab facilities for PVT and phase behaviour of petroleum fluids	This suggestion is related to the one discussed in sections 1 and 2. We are going to invest in expensive new lab equipment for PVT analysis as the natural gas development in Cyprus is progressing. At this stage we do not expect that our graduates will be placed in positions that require to do PVT analysis. The necessary knowledge on PVT phase behavior is taught in different courses explained in section 1.	Choose an item.
Safety measures and procedures	The Engineering School takes all the safety measures and procedures and train the students on HSE before entering in the labs. The Department has a dedicated staff on HSE issues.	Choose an item.
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5. **Additional for doctoral programmes**
   (ALL ESG)

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7. Eligibility (Joint programme)

(ALL ESG)

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B. Conclusions and final remarks

Conclusions and final remarks **by EEC**	Actions Taken by the Institution	For official use Only
the Master's program in Natural Gas in Energy Transition offered by the University of Cyprus is of very good level. It exhibits several positive aspects that contribute to its overall quality and effectiveness. The program's structure is well-organized, providing a clear and logical progression of courses, ensuring students acquire comprehensive knowledge in the field of petroleum and natural gas engineering. The involvement of industry experts in designing and teaching the courses adds real-world experience and practical insights, keeping students updated with current industry practices. The comprehensive curriculum covers a wide range of topics, equipping students with a strong foundation in key aspects of the oil and gas industry. Additionally, the program emphasizes innovative concepts, technologies, and interdisciplinary collaborations, preparing students to navigate future challenges in the field	We recognized the valuable input of the External Evaluation Committee provided during its site visit and in the evaluation report; we are very grateful to the Committee for its feedback. The Program Managing Committee will maintain all the strong positive characteristics mentioned in the report and address in different many ways all the suggestions for further improvement.	Choose an item.
The program should consider incorporating standalone courses on PVT analysis and project management to enhance students' understanding of fluid behaviour and project execution skills, also pore and sample scale geology needs to be promoted in order for the students to understand petrophysical data and rock physics. Moreover, the absence of a final year research project limits students' opportunities for independent research and practical application of their knowledge	These actions were discussed in section 1, rows 1a, 1c These actions were discussed in section 1, row 2	Choose an item.
Another aspect that warrants improvement is the program's focus on energy transition. Incorporating relevant courses on energy transition topics would align the program more closely with its name and better prepare students for the evolving energy landscape. Furthermore, the program should address the challenge of providing sufficient foundation courses for students coming from other backgrounds, such as electrical engineering	These actions were discussed in section 1, rows 3, 4	Choose an item.
In terms of teaching methodologies, the University of Cyprus demonstrates a commitment to student-centred approaches, practical training, and assessment. However, there is room for improvement in adopting innovative teaching methods and creating a dynamic learning environment. Encouraging faculty participation in continuous professional development programs.	These actions were discussed in section 2, row 3 and section 3 row 3	Choose an item.
The department should also establish a comprehensive review process for exam papers, combining internal and	These actions were discussed in section 2, rows 3, 4	Choose an item.

external scrutiny. This process should involve subject matter experts and external input to ensure exam papers align with internationally recognized standards. Making sample exam papers available to students for each course would familiarize them with the exam format and expectations, leading to better preparedness and performance		
Regarding the teaching staff, the University of Cyprus demonstrates a strong commitment to maintaining a competent and qualified faculty. However, addressing the lack of full-time staff members with a petroleum engineering educational background is crucial to maintaining the quality and depth of instruction in this field. Implementing targeted recruitment strategies to attract qualified staff members would address this challenge	These actions were discussed in section 3, rows 1	

C.

D. Higher Education Institution academic representatives

Name	*Position*	*Signature*
Panos Papanastasiou	Professor, Program Coordinator	
Marina Neophytou	Professor, Department Head	
Click to enter Name	Click to enter Position	
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: 22 August, 2023

5 Lemesou Avenue, 2112, Nicosia
T: + 357 22 504 340
F: + 357 22 504 392
e-mail: info@dipae.ac.cy