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Accreditation Report

for the Postgraduate Study Programme of: Sustainable Engineering and Climate Change

Department: Chemical and Environmental Engineering (former
Environmental Engineering)

Institution: Technical University of Crete

Date: 24/02/2025



Επιχειρησιακό Πρόγραμμα
Ανάπτυξη Ανθρώπινου Δυναμικού,
Εκπαίδευση και Διά Βίου Μάθηση
Με τη συγχρηματοδότηση της Ελλάδας και της Ευρωπαϊκής Ένωσης



NOTES

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Report of the Panel appointed by the HAHE to undertake the review of the Postgraduate Study Programme of **Sustainable Engineering and Climate Change** of the **Technical University of Crete** for the purposes of granting accreditation

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PART A: BACKGROUND AND CONTEXT OF THE REVIEW

I. The External Evaluation & Accreditation Panel

The Panel responsible for the Accreditation Review of the postgraduate study programme of Sustainable Engineering and Climate Change of the **Technical University of Crete** comprised the following five (5) members, drawn from the HAHE Register, in accordance with Laws 4009/2011 & 4653/2020:

1. PAVLOSTATHIS SPYROS (Chair)
(Title, Name, Surname)
School of Civil and Environmental Engineering, Georgia Institute of Technology
(Institution of origin)

2. ALVANIDES (ΑΛΒΑΝΙΔΗΣ) SERAPHIM (ΣΕΡΑΦΕΙΜ)
(Title, Name, Surname)
University of BambergBavaria, Germany
(Institution of origin)

3. CONSTANTINOU STAVROS
(Title, Name, Surname)
Department of Geography, College of Arts and Sciences, The Ohio State University
(Institution of origin)

4. Karanafti Aikaterina
(Title, Name, Surname)
Aristotle University of Thessaloniki
(Institution of origin)

5. KATOPODES NIKOLAOS
(Title, Name, Surname)
University of Michigan
(Institution of origin)

II. Review Procedure and Documentation

Please refer briefly to the Panel preparation for the postgraduate study programme review, as well as to the documentation provided and considered by the Panel. State the dates of the review and describe the review and the meetings held. Feel free to mention any additional information regarding the procedure, as appropriate.

In preparation for the review and assessment of the new PSP Sustainable Engineering and Climate Change of the Technical University of Crete, the External Evaluation & Accreditation Panel (EEAP) reviewed a multitude of materials provided by the Hellenic Authority of Higher Education (HAHE), which included background information and guidance on the review and accreditation process, as well as detailed material and data related to the programme under evaluation, such as the programme accreditation proposal and associated appendices provided by the new PSP through the HAHE.

The programme review was conducted via teleconference, organized, and coordinated by HAHE and the Technical University of Crete (TUC). The schedule and agenda of the review were as stated below.

Monday 17/02/2025:

- a) Preliminary private meeting of the EEAP. Discussion of the programme under review; assignment of writing parts of the draft accreditation report to the EEAP members.
- b) Welcome meeting and a brief overview of the new PSP with the Vice Rector and President of MODIP Prof. F. Kanellos, MODIP Staff Ms. A. Lyroni, the Dean of the School of Chemical and Environmental Engineering Prof. P. Gikas, the PSP Director Prof. A. Koutroulis, PSP Steering Committee members Profs. D. Kolokotsa and G. Karatzas, School of Chemical and Environmental Engineering MODIP member Prof. Y. Tsompanakis, OMEA members Profs. M. Fountoulakis, D. Gounis and Laboratory Teaching Staff member Dr. Th. Glytsos. Brief presentation of School history and accomplishments; presentation of the structure, quality assurance, and other futures of the new PSP.
- c) Meeting with School of Chemical and Environmental Engineering administrative staff member Mr. T. Pliakas and Teaching Staff members Profs. N. Diangelakis, A. Voulgarakis, A. Stefanakis, A. Giannis, and laboratory Teaching Staff member Dr. E. Koukouraki. On-line tour of facilities, discussion of facilities, equipment, laboratory safety policy, and learning resources.
- d) EEAP meeting. Discussion of the programme under review, impressions of the first day, coordination, and preparation for the remaining review process.

Tuesday 18/02/2025:

- a) Meeting with PSP teaching staff members, Profs. T. Daras, N. Diangelakis, A. Giannis, N. Paranychianakis, A. Stefanakis, D. Venieri, A. Voulgarakis, and N. Xekoukoulotakis: Discussion of teaching involvement, learning resources and other features of the new PSP, professional development, research activities, as well as link between teaching and research.
- b) Meeting and discussion with ten (10) current PSP students.
- c) Meeting and discussion with ten (10) PSP graduates.
- d) Meeting and discussion with employers and PSP social partners: Mr. G. Metalliotakis, Deputy Regional Governor, Region of Crete; Mr. A. Pountourakis, Commercial Director, Plasis Energy-CEO; Dr. M. Kritsotakis, General Director of Sustainability, Region of Crete; Mr. E. Lekkas, Deputy Mayor of Civil Protection, Municipality of Chania; Mr. P. Sarris, Business Development Manager, Sarris Energy; Ms. Ch. Tsamoutsoglou, Deputy Director of Leachate Processing, DEDISA; Mr. C. Kehagias, Business Development, DIOM NET; Mr. P. Marinakis, Executive Councillor of Tourism Development & Sustainability, Municipality of Platanias.
- e) Private debriefing meeting (EEAP members only): Discussion of the outcomes and findings of the PSP virtual visit; preparation of oral report.
- f) Closure meeting with Vice Rector and President of MODIP, MODIP Staff, School Dean, PSP Director, PSP Steering Committee members, School MODIP member, and School OMEA members: Informal, oral presentation of the EEAP PSP key findings, discussion, and clarifications.

Wednesday 19/02/2025 to Sunday 23/02/2025:

Draft report writing. EEAP virtual meeting. Review and finalization of the draft report.

Throughout the review and evaluation process, the EEAP was in close communication with the School, PSP administration, and MODIP staff, which were very accommodating in providing additional information requested by the EEAP. The EEAP found that the School, PSP administration, and MODIP staff, as well as the faculty, current PSP students, PSP graduates, staff, and stakeholders interviewed were eager and helpful in our discussions, providing valuable additional information.

III. Postgraduate Study Programme Profile

Please provide a brief overview of the postgraduate study programme with reference to the following: history, academic remit, duration of studies, qualification awarded, employment opportunities, orientation challenges or any other key background information. Also, you may provide a short description of the home Department and Institution, with reference to student population, campus or any other facts, as deemed appropriate.

The establishment of the new postgraduate study programme (PSP) “Sustainable Engineering and Climate Change” was approved by the Technical University of Crete (TUC) Senate (meeting 583/14-02-2022) based on the provisions of Public Law 4957/2022 as well as other pertinent laws and regulations (Government Gazette 3150/22-06-2022/Issue B; No. 583/18a/2022). The new PSP offered by the School of Chemical and Environmental Engineering, TUC, was launched in the academic year 2022-2023. The new PSP replaced a previous PSP “Environmental Engineering” which was launched in 2018. The decision for the new PSP was based on the School’s more recent emphasis on sustainable engineering and climate change, as well as to be offered in English.

The goals of the new PSP are: a) training professionals with skills in environmental risk management and technological applications; b) preparing professionals with specialized skills in environmental sciences to meet the demands of the domestic and international job market; c) training individuals in modern methodologies and technologies to become leaders in technology, research, and education; d) expanding the environmental research ecosystem of the Technical University of Crete.

Teaching in the PSP is carried out by seventeen (17) faculty members of the School of Chemical and Environmental Engineering (TUC). Specialized technical staff and administrative staff assist the PSP.

The programme has set at thirty (30) the maximum number of admitted students per academic year. Admitted students hold first cycle degrees in Environmental Engineering, Civil Engineering, other engineering disciplines, Physics, Chemistry, Geology, Geography, Agriculture, Mathematics, Statistics, Computer Science, Medical and Biological Sciences, as well as Hellenic Higher Military Educational Institutions or the equivalent educational institutions of foreign countries. The admission criteria and selection process are specified in the PSP Programme Guide, which is posted on the PSP site. Tuition fees are set at €3000 for the entire programme.

The PSP consists of three (3) academic semesters study resulting in level 7 Diploma of Postgraduate Studies. To graduate, the student must have successfully completed a total of 90 European Credit Transfer System (ECTS) credits: 60 ECTS for coursework (4 mandatory

courses, 2 elective courses, and 2 Research Lectures) and 30 ECTS for the preparation and successful completion of the mandatory postgraduate thesis). Lectures are given in a hybrid mode, i.e., in-person and synchronous remotely; lecture attendance is mandatory.

The PSP graduates will be trained in interdisciplinary research with abilities and skills to study and solve critical national and global environmental problems within the framework of a sustainable and circular economy. Graduates will be prepared for careers in both the private and public sectors of the economy, capable of staffing national or international research or administrative organizations, as well as continuing with doctoral studies. There are strong links to society, which is key priority of the PSP Sustainable Engineering and Climate Change, the School of Chemical and Environmental Engineering, and the Institution.

The School of Chemical and Environmental Engineering supports doctoral studies.

PART B: COMPLIANCE WITH THE PRINCIPLES

PRINCIPLE 1: QUALITY ASSURANCE POLICY AND QUALITY GOAL SETTING FOR THE POSTGRADUATE STUDY PROGRAMMES OF THE INSTITUTION AND THE ACADEMIC UNIT

INSTITUTIONS SHOULD APPLY A QUALITY ASSURANCE POLICY AS PART OF THEIR STRATEGIC MANAGEMENT. THIS POLICY SHOULD EXPAND AND BE AIMED (WITH THE COLLABORATION OF EXTERNAL STAKEHOLDERS) AT THE POSTGRADUATE STUDY PROGRAMMES OF THE INSTITUTION AND THE ACADEMIC UNIT. THIS POLICY SHOULD BE PUBLISHED AND IMPLEMENTED BY ALL STAKEHOLDERS.

The quality assurance policy of the academic unit should be in line with the quality assurance policy of the Institution and must be formulated in the form of a public statement, which is implemented by all stakeholders. It focuses on the achievement of special goals related to the quality assurance of the study programmes offered by the academic unit.

Indicatively, the quality policy statement of the academic unit includes its commitment to implement a quality policy that will promote the academic profile and orientation of the postgraduate study programme (PSP), its purpose and field of study; it will realise the programme's goals and it will determine the means and ways for attaining them; it will implement appropriate quality procedures, aiming at the programme's improvement.

In particular, in order to implement this policy, the academic unit commits itself to put into practice quality procedures that will demonstrate:

- a) the suitability of the structure and organisation of postgraduate study programmes*
- b) the pursuit of learning outcomes and qualifications in accordance with the European and National Qualifications Framework for Higher Education - level 7*
- c) the promotion of the quality and effectiveness of teaching at the PSP*
- d) the appropriateness of the qualifications of the teaching staff for the PSP*
- e) the drafting, implementation, and review of specific annual quality goals for the improvement of the PSP*
- f) the level of demand for the graduates' qualifications in the labour market*
- g) the quality of support services, such as the administrative services, the libraries and the student welfare office for the PSP*
- h) the efficient utilisation of the financial resources of the PSP that may be drawn from tuition fees*
- i) the conduct of an annual review and audit of the quality assurance system of the PSP through the cooperation of the Internal Evaluation Group (IEG) with the Institution's Quality Assurance Unit (QAU)*

Documentation

- Quality Assurance Policy of the PSP
- Quality goal setting of the PSP

Study Programme Compliance

Please comment on the compliance with the Principle. Specifically: Please describe the findings related to the Principle, analyse, and conclude your judgement. Findings, analysis of judgement and conclusions should be developed below in three distinct parts.

I. Findings

The School of Chemical and Environmental Engineering, one of five Schools at the Technical University of Crete (TUC), launched the Post Graduate Programme (PSP) titled "Sustainable Engineering and Climate Change" in the academic year 2022-2023 (Government Gazette Issue 3150/22-06-2022/Issue B). For context, the PSP under review represents the evolution and renaming of the previous PSP in Environmental Engineering.

This PSP is "unique" for Greece and highly significant as it addresses the urgent need to train environmentally minded engineers for the private and public sectors of the economy as well as higher education in understanding and mitigating the impacts of climate change and sustainable development, two of the most pressing global challenges of our time.

The strategic goals of the PSP cover five thematic areas: 1) High-quality education with student-centered learning. 2) Preparation of well-trained chemical and environmental engineers who can evaluate, design, and implement decisions and constantly evolve into various activities to compete in current and future challenges within a rapidly technological and scientifically developing society. 3) Research and Innovation with a focus on cutting-edge scientific areas. 4) Research Integration: Strengthen research in the field by integrating graduates into the national and international research community. 5) Institutional Support aiming to improve students' access to state-of-the-art laboratories and research facilities, enhancing their learning and research experience.

The PSP offers both full-time and part-time study options. The programme spans three academic semesters, totaling 90 ECTS credits, with 30 credits per semester. Students use the final semester to write the PSP thesis. The learning outcomes and qualifications acquired from this programme are fully compatible with the European and National Qualifications Framework for Higher Education (E & NQFHE) Level 7.

The achievement of quality within the PSP and the optimization of processes in all areas (educational, research, administrative, etc.) are monitored, assessed, and evaluated through defined quality indicators per applicable legislation and the E & NQFHE Level 7.

To implement this policy, the School of Chemical and Environmental Engineering commits to the following processes and procedures for monitoring and continuous improvement of the PSP quality: 1) Establishment of an appropriate structure and organization of the PSP. 2) Pursuit of learning outcomes and qualifications set by the E & NQFHE Level 7. 3) Evaluation of the quality and effectiveness of teaching in the PSP through the MODIP questionnaire. 4) Selection of qualified teaching faculty with significant research records. 5) Drafting, implementation, and review of specific annual quality objectives to

achieve programme improvement. 6) Produce qualified graduates who are competitive in the labor market and monitor their job placements. 7) Maintain quality support services, such as administrative services, libraries, and student welfare services for the PSP. 8) Ensure efficient management of the financial resources of the PSP to achieve a budget neutral programme. 9) Conduct an annual internal evaluation and review of the quality assurance system for the PSP in collaboration with the School's Internal Evaluation Group (OMEA) and the University's Quality Assurance Unit (MODIP).

II. Analysis

The PSP under review has a well-thought-out structure and conforms to the regulations for establishing and renaming a PSP, having received the approval of the TUC Senate. The programme's profile and learning outcomes meet the E & NQFHE Level 7. The qualified teaching faculty of the PSP, who also have high-quality research records, fully support this statement.

The curriculum aims to educate competent and competitive graduates who will meet the growing demand in the labor market (private, public, and higher education). The curriculum is comprehensive in scope and provides students with the expertise needed to meet the demands of sustainable development and climate change. The graduates will become part of the solution for real-life problems facing the area, like water shortages, coastal erosion, clean water and wastewater treatment.

The School of Chemical and Environmental Engineering, in collaboration with the University's MODIP and the School's OMEA, has established the quality policy of the PSP "Sustainable Engineering and Climate Change." Implementation of this policy involves setting clear objectives, key performance indicators, and continuous monitoring to progress toward realizing those targets. The goal is to secure the constant development and improvement of the PSP and the academic unit.

The Quality Assurance Policy of the PSP is publicly accessible on the School's website. It includes comprehensive references to PSP delivery, highlights commitments to meet requirements and strive for continuous improvement. Additionally, a PSP Steering Committee, in conjunction with OMEA, further supports the overall quality assurance of the PSP.

The EEAP meeting with employers and social partners demonstrated the desire of all present to work with the School of Chemical and Environmental Engineering to improve the new PSP. One of the external stakeholders described a formal External Review Board as "ideal."

III. Conclusions

The programme is substantially compliant with Principle 1.

Panel Judgement

Please tick one of the following:

Principle 1: Quality assurance policy and quality goal setting for the postgraduate study programmes of the institution and the academic unit	
Fully compliant	
Substantially compliant	X
Partially compliant	
Non-compliant	

Panel Recommendations

Please provide your recommendations with regard to issues that need to be addressed, as appropriate.

R1.1 Emphasize the PSP's sustainable engineering and climate change components by relating them to the most relevant United Nations Sustainable Development Goals (SDGs). This approach will make the programme more attractive to international students and increase its visibility.

R1.2 Increase the number and refine KPIs to set measurable goals, especially those related to students' performance, track outcomes, and identify areas for improvement, strengthening the overall quality and impact of the PSP.

R1.3 Establish a formal PSP External Advisory Board. Such a board will comprise members of the private and public sectors, graduates, and other programme stakeholders.

R1.4 Enhance collaborations with other Universities by actively utilizing opportunities provided by the Erasmus+ programme.

PRINCIPLE 2: DESIGN AND APPROVAL OF POSTGRADUATE STUDY PROGRAMMES

INSTITUTIONS SHOULD DEVELOP THEIR POSTGRADUATE STUDY PROGRAMMES FOLLOWING A DEFINED WRITTEN PROCESS WHICH WILL INVOLVE THE PARTICIPANTS, INFORMATION SOURCES AND THE APPROVAL COMMITTEES FOR THE POSTGRADUATE STUDY PROGRAMMES. THE OBJECTIVES, THE EXPECTED LEARNING OUTCOMES AND THE EMPLOYMENT PROSPECTS ARE SET OUT IN THE PROGRAMME DESIGN. DURING THE IMPLEMENTATION OF THE POSTGRADUATE STUDY PROGRAMMES, THE DEGREE OF ACHIEVEMENT OF THE LEARNING OUTCOMES SHOULD BE ASSESSED. THE ABOVE DETAILS, AS WELL AS INFORMATION ON THE PROGRAMME'S STRUCTURE ARE PUBLISHED IN THE STUDENT GUIDE.

The academic units develop their postgraduate study programmes following a well-defined procedure. The academic profile and orientation of the programme, the research character, the scientific objectives, the specific subject areas, and specialisations are described at this stage.

The structure, content and organisation of courses and teaching methods should be oriented towards deepening knowledge and acquiring the corresponding skills to apply the said knowledge (e.g. course on research methodology, participation in research projects, thesis with a research component).

The expected learning outcomes must be determined based on the European and National Qualifications Framework (EQF, NQF), and the Dublin Descriptors for level 7. During the implementation of the programme, the degree of achievement of the expected learning outcomes and the feedback of the learning process must be assessed with the appropriate tools. For each learning outcome that is designed and made public, it is necessary that its evaluation criteria are also designed and made public.

In addition, the design of PSP must consider:

- *the Institutional strategy*
- *the active involvement of students*
- *the experience of external stakeholders from the labour market*
- *the anticipated student workload according to the European Credit Transfer and Accumulation System (ECTS) for level 7*
- *the option of providing work experience to students*
- *the linking of teaching and research*
- *the relevant regulatory framework and the official procedure for the approval of the PSP by the Institution*

The procedure of approval or revision of the programmes provides for the verification of compliance with the basic requirements of the Standards by the Institution's Quality Assurance Unit (QAU).

Documentation

- *Senate decision for the establishment of the PSP*
- *PSP curriculum structure: courses, course categories, ECTS awarded, expected learning outcomes according to the EQF, internship, mobility opportunities*
- *Labour market data regarding the employment of graduates, international experience in a relevant scientific field*
- *PSP Student Guide*
- *Course and thesis outlines*

- *Teaching staff (name list including of areas of specialisation, its relation to the courses taught, employment relationship, and teaching assignment in hours as well as other teaching commitments in hours)*

Study Programme Compliance

Please comment on the compliance with the Principle. Specifically: Please describe the findings related to the Principle, analyse, and conclude your judgement. Findings, analysis of judgement and conclusions should be developed below in three distinct parts.

I. Findings

The establishment of the new postgraduate study programme (PSP) “Sustainable Engineering and Climate Change” was approved by the Technical University of Crete (TUC) Senate (meeting 583/14-02-2022) based on the provisions of Public Law 4957/2022 as well as other pertinent laws and regulations (Government Gazette 3150/22-06-2022/Issue B; No. 583/18a/2022). The new PSP offered by the School of Chemical and Environmental Engineering, TUC, was launched in the academic year 2022-2023. The new PSP replaced a previous PSP “Environmental Engineering” which was launched in 2018. The decision for the new PSP was based on the School’s more recent emphasis on sustainable engineering and climate change, as well as to be offered in English.

The PSP in Sustainable Engineering and Climate Change is offered as full-time (3 semesters) or part-time (6 semesters) study, the latter for working students and “for non-working students in the exclusive and only case of proven serious health problems”. The PSP is well designed, covering a good range of topics from the broader fields related mostly to Chemical Engineering, Environmental Engineering and to a lesser extent aspects of Climate Change. Although the overall focus is on Engineering and Natural Sciences, there are two courses on Economics (one in the compulsory and one in the elective list) and a course (in the compulsory list) on climate change impact assessment (CCIA). The various course outlines are clearly presented, the assessment methods reflect the learning outcomes, and they are appropriate for postgraduate Level 7. However, the specific course learning outcomes should be updated in accordance with the European Qualifications Framework level 7.

The academic staff delivering and assessing the courses are eminent researchers in their respective fields with peer reviewed publications in international outlets, as well as involvement in various research projects. The current students and graduates made explicit reference to the research aspects of the PSP and the research culture of the School overall, mentioning involvement with research laboratories and participation in projects as part of their PSP Thesis research. As a result, there is also evidence of stakeholder participation in the curriculum development of the proposed PSP, albeit not based on a formal feedback mechanism.

The Study Guide is reasonably well structured and clearly articulates most of the information deemed necessary for the students, such as details of the Institution, the School, the structure of the programme, study regulations, registration process, course enrollment, Erasmus+ opportunities, etc.

II. Analysis

The EEAP did not consider the rather dated “Program Guide Academic Year 2023-24”, because it has been superseded by changes, such as removing the 2 specializations or directions. Therefore, instead the current “Postgraduate Studies Program Guide 2024-25 (pdf)” publicly available online https://www.chenveng.tuc.gr/fileadmin/users_data/chenveng-master-secc/SECC_Program_Guide_2024-25.pdf was considered. The courses are offered in lists of required and elective courses, which may be somehow confusing, because the required courses are also elective in the sense that a student is not expected to take all the required courses, but a selection of 2 (x9 credits), plus a selection of 1 elective (x9 credits) and also Research Lectures (x3 credits) in each Semester. In other words, there are no core/compulsory “content” courses that all students are expected to complete, apart from the Research Lectures (once per semester) and the PSP Thesis. This structure offers flexibility and choice but may also result in students graduating without a clear understanding of essential principles on sustainability and climate change. Ideally, every course should list which 17 UN Sustainable Development Goals (SDGs) it is relating to and attempting to address. The PSP offers a wide range of courses; thus, this “mapping” would provide valuable information to prospective students, and strengthen the international perspective of the PSP.

As the PSP has been designed with the view of enrolling students from a wide range of backgrounds, it is important that all the graduates have a common understanding of principles of sustainability and climate change, as well as a good research foundation to proceed with their PSP Thesis. The current structure of the PSP does not allow for the former and the course “Research Lectures” only partially addresses the latter. For example, there is no course addressing explicitly research methodologies, the assumption being that students enrolling in the PSP have obtained a range of methodological skills from their undergraduate studies. Although the students are expected to submit a document entitled “Master's Thesis Proposal” and the “topic of the Thesis is approved by the School Assembly”, it seems that the proposal itself is not assessed towards any credits and it is not clear how feedback is then provided to the students.

The School should consider making one of the required courses from each semester core/compulsory for all students, thus offering a stronger foundation and identity for the PSP graduates. Good candidates for core/compulsory courses are: B208 Climate Change and Greenhouse Gas Emissions (Semester 1: 9 credits) and B212 Climate Change Impact Assessment in Practice (Semester 2: 9 credits). The preparation towards the compulsory PSP Thesis, should also be strengthened,

especially as some students have not undertaken any research as part of their undergraduate studies. This can be achieved by replacing the current underassessed “Research Lectures” courses (AB301+AB304 = 6 ECTS) with a long course running in both semesters (3+3= 6 ECTS), focusing on research methodologies, literature reviews, research project design/management, research ethics, and presenting/writing up research results. Attendance of “Research Lectures” could remain an element of the course, but the assessment for 6 ECTS could be replaced with the submission of an assessed research proposal towards the PSP Thesis consisting of: Proposed title, aim, objectives, short literature review, sources of data for collection/analysis and proposed methodology. Short student presentations could also be added, possibly as part of the “Research Lectures”, that can also be assessed alongside the proposal towards the 6 ECTS.

It is also important to mention here that the various stakeholders introduced to the EEAP expressed a very positive opinion for the University, the School and the programme, on the basis of past and current experience through collaborations with academic staff and interactions with students working on their PSP Thesis. Some of the stakeholders have employed graduates or have graduated from the PSP themselves. However, it was not entirely clear to what extent the Board provides input on the strategic development of this programme, potential curriculum enhancements to reflect the technological and socioeconomic needs from the industry and from societal organisations, etc.

III. Conclusions

The PSP in Sustainable Engineering and Climate Change complies substantially with the HAHE requirements of Principle 2. However, the structure could be fine-tuned to ensure that the students have a common grounding of principles of sustainability and climate change, as well as a good understanding of the PSP Thesis process. It is surprising that the UN Sustainable Development Goals (SDGs) are mentioned only once in the entire Programme Guide in relation to a single course.

Panel Judgement

Please tick one of the following:

Principle 2: Design and approval of postgraduate study programmes	
Fully compliant	
Substantially compliant	X
Partially compliant	
Non-compliant	

Panel Recommendations

Please provide your recommendations with regard to issues that need to be addressed, as appropriate.

R2.1 Introduce the concept of UN Sustainable Development Goals (SDGs) across the board and certainly in the Programme Guide mapping each course to the relevant SDGs.

R2.2 Consider making one of the required courses from each semester core/compulsory for all students. The EEAP proposed B208 (Semester 1) and B212 (Semester 2).

R2.3 Strengthen the preparation towards the compulsory PSP Thesis, by replacing the current “Research Lectures” (6 ECTS in total) with a long course running in both semesters (6 ECTS in total), focusing on providing research and management skills towards the PSP Thesis.

PRINCIPLE 3: STUDENT-CENTRED LEARNING, TEACHING, AND ASSESSMENT

INSTITUTIONS SHOULD ENSURE THAT POSTGRADUATE STUDY PROGRAMMES PROVIDE THE NECESSARY CONDITIONS TO ENCOURAGE STUDENTS TO TAKE AN ACTIVE ROLE IN THE LEARNING PROCESS. THE ASSESSMENT METHODS SHOULD REFLECT THIS APPROACH.

Student-centred learning and teaching plays an important role in enhancing students' motivation, their self-evaluation, and their active participation in the learning process. The above entail continuous consideration of the programme's delivery and the assessment of the related outcomes.

The student-centred learning and teaching process

- *respects and attends to the diversity of students and their needs by adopting flexible learning paths*
- *considers and uses different modes of delivery, where appropriate*
- *flexibly uses a variety of pedagogical methods*
- *regularly evaluates and adjusts the modes of delivery and pedagogical methods aiming at improvement*
- *regularly evaluates the quality and effectiveness of teaching, as documented especially through student surveys*
- *strengthens the student's sense of autonomy, while ensuring adequate guidance and support from the teaching staff*
- *promotes mutual respect in the student-teacher relationship*
- *applies appropriate procedures for dealing with the students' complaints*
- *provides counselling and guidance for the preparation of the thesis*

In addition

- *The academic staff are familiar with the existing examination system and methods and are supported in developing their own skills in this field.*
- *The assessment criteria and methods are published in advance. The assessment allows students to demonstrate the extent to which the intended learning outcomes have been achieved. Students are given feedback, which, if necessary is linked to advice on the learning process.*
- *Student assessment is conducted by more than one examiner, where possible.*
- *Assessment is consistent, fairly applied to all students and conducted in accordance with the stated procedures.*
- *A formal procedure for student appeals is in place.*
- *The function of the academic advisor runs smoothly.*

Documentation

- *Sample of a fully completed questionnaire for the evaluation of the PSP by the students*
- *Regulations for dealing with students' complaints and appeals*
- *Regulation for the function of academic advisor*
- *Reference to the teaching modes and assessment methods*

Study Programme Compliance

Please comment on the compliance with the Principle. Specifically: Please describe the findings related to the Principle, analyse, and conclude your judgement. Findings, analysis of judgement and conclusions should be developed below in three distinct parts.

I. Findings

The new PSP embraces the principles of student-centered teaching and active learning. Additionally, it implements systematic evaluation methods, ensuring students are informed about the assessment criteria and methods used.

Instruction is delivered through both face-to-face and remote synchronous lectures. Additionally, students engage in seminars, exercises, projects, presentations, and discussions. They also have opportunities to attend lectures by invited scientists, participate in scientific workshops, and make educational visits to gain knowledge and experience. Thus, teaching uses a variety of pedagogical methods and is very flexible.

The evaluation procedures for courses and instructors are conducted in accordance with Article 44 of Law 4485/2017. At the end of each semester, postgraduate students evaluate each course and instructor electronically by completing a questionnaire. The content of this questionnaire is prepared by the University MODIP.

The thesis, written in English, is an individual project the student completes in the third semester. It is conducted under the guidance and supervision of a faculty member (supervisor) who is an instructor in the postgraduate programme. The Steering Committee appoints the supervisor upon the student's request.

The PSP extends one and a half years, or three semesters, during which students earn 90 European Credit Transfer and Accumulation System (ECTS) credits. The coursework is completed in the first two semesters (30 ECTS each), while the third semester is dedicated to the PSP thesis, worth 30 ECTS credits. Students are required to attend lectures and workshops, participate in field trips, conduct limited lab work, and undergo evaluations at the end of each semester.

The PSP diploma qualifies graduates for employment in both the private and public sectors. Graduates can also pursue doctoral studies and continue with academic careers. Several of the employers and social partners during the interview with the EEAP were graduates of the PSP and praised their experiences with the programme. Also, local government representatives were very positive in their interactions with the faculty. They stressed the importance of the programme in solving real-life problems that face the area and, more broadly, the Island of Crete.

The Technical University of Crete and the School of Chemical and Environmental Engineering are participating in the ERASMUS+ Mobility Programme, which has been in force since January 1st, 2014, and deals with mobility for studies and traineeships. ERASMUS + scholarships are funded by the Greek Foundation for State Scholarships (IKY). One of the PSP graduates who participated in the EEAP interview was interning at an environmental organization in Uruguay.

The PSP provides detailed and comprehensive programme information that students will find helpful. The Study Guide thoroughly describes the evaluation of applications and admissions criteria, study duration, course exams and grading, requirements for the successful completion of the PSP, and the preparation of a successful PSP thesis. It also includes information about evaluating instructors and courses, the graduation ceremony, and the rights and responsibilities of the postgraduate students.

II. Analysis

The goal of the PSP is to train scientists and professionals with high qualifications, skills, and backgrounds to serve the modern scientific research in cutting-edge areas related to climate change and environmental management, and to design sustainable energy systems and environmentally sustainable cities of the future. These new scientists will meet the staffing needs of public, social, private, and local government bodies with relevant missions and responsibilities. The PSP also aims to update the knowledge and skills of those already employed in these fields, including executives in regional administration, local government, educational institutions, Non-Governmental Organizations (NGOs), and the armed forces.

The rates of student evaluation of instruction are extremely low. The School of Chemical and Environmental Engineering must explore ways to develop a culture for student participation in evaluating their courses and instructors. As one student suggested, a midcourse diagnostic evaluation will guide timely changes in the course and may promote student participation in the evaluation process at the end of the semester.

Recording and making lectures available to students is a valuable and essential resource. While this task can be time-consuming, it offers significant flexibility, particularly benefiting international students across various time zones.

The establishment of introductory courses and other procedures will be very helpful to students without an in-depth background in following the programme. Additionally, access to support resources, such as tutoring, academic advising, and study groups will further help students to succeed.

The EEAP's meeting with employers and social partners highlighted the need for the proposed PSP, emphasizing the demand for qualified graduates that the programme aims to produce. Employers and social partners strongly supported the new programme and the School of Chemical and Environmental Engineering faculty members who will implement it. Employers with long-standing relationships with the faculty members appreciated this ongoing collaboration.

III. Conclusions

The programme is substantially compliant with Principle 3.

Panel Judgement

Please tick one of the following:

Principle 3: Student-centred learning, teaching, and assessment	
Fully compliant	
Substantially compliant	X
Partially compliant	
Non-compliant	

Panel Recommendations

Please provide your recommendations with regard to issues that need to be addressed, as appropriate.

R3.1 Improve the rate of students' course/instructor evaluation by including both quantitative and qualitative feedback to get a more balanced view of student experiences.

R3.2 Conduct evaluations regularly, not just at the end of the course. Mid-term evaluations can provide timely feedback that instructors can act on immediately.

R3.3 Recording and making lectures available to students is a valuable resource that enhances learning flexibility.

R3.4 Creating a handbook for writing a PSP thesis can be incredibly helpful for students, especially those who have not done so before.

PRINCIPLE 4: STUDENT ADMISSION, PROGRESSION, RECOGNITION OF POSTGRADUATE STUDIES, AND CERTIFICATION.

INSTITUTIONS SHOULD DEVELOP AND APPLY PUBLISHED REGULATIONS COVERING ALL ASPECTS AND PHASES OF STUDIES (ADMISSION, PROGRESSION, THESIS DRAFTING, RECOGNITION AND CERTIFICATION).

All the issues from the beginning to the end of studies should be governed by the internal regulations of the academic units. Indicatively:

- *the student admission procedures and the required supporting documents*
- *student rights and obligations, and monitoring of student progression*
- *internship issues, if applicable, and granting of scholarships*
- *the procedures and terms for the drafting of assignments and the thesis*
- *the procedure of award and recognition of degrees, the duration of studies, the conditions for progression and for the assurance of the progress of students in their studies*
- *the terms and conditions for enhancing student mobility*

All the above must be made public in the context of the Student Guide.

Documentation

- *Internal regulation for the operation of the Postgraduate Study Programme*
- *Research Ethics Regulation*
- *Regulation of studies, internship, mobility, and student assignments*
- *Degree certificate template*

Study Programme Compliance

Please comment on the compliance with the Principle. Specifically: Please describe the findings related to the Principle, analyse, and conclude your judgement. Findings, analysis of judgement and conclusions should be developed below in three distinct parts.

I. Findings

The PSP can admit a maximum of 30 students every academic year. The admission criteria are clearly stated in the Study Guide. Once the students are admitted to the programme they receive guidelines for their enrollment and information about all services provided. The PSP Director along with the PSP Steering Committee organize an informative event at the beginning of the first semester.

For their successful graduation, the students need a total of 90 ECTS over a three-semester study, from which 30 ECTS corresponds to the PSP thesis. The minimum passing grade for each course is 6/10. The students' attendance, either physical or remote, in every lesson is mandatory. The postgraduate student in each academic year with the best academic performance receives an award in the form of the "Panagiotis Manolopoulos" scholarship along with €1500.

The PSP thesis is individual, and its successful completion is compulsory for the PSP diploma attainment. It should last not less than 3 months with the third semester being dedicated to it. The thesis must cover the analysis of a research subject.

Mobility of the PSP students for study or traineeship abroad is feasible because the School participates in the Erasmus+ Mobility Programme; however, such mobility is not mandatory. The PSP also accepts incoming Erasmus students. The Code of Research Ethics has been adopted by the University and the PSP. Finally, the PSP diploma supplement is issued both in Greek and English.

II. Analysis

The EEAP formed a positive opinion regarding the quality maintained among the PSP admitted students. Specifically, the PSP Director and the Steering Committee mentioned that they prefer admitting fewer than 30 students, even though this significantly reduces tuition revenue, to ensure that all admitted students have a background with strong relevance to the programme's field of study. During the discussion with the PSP current students and recent graduates the EEAP got the impression that there is a fast and easy familiarization of the students with the study process, their academic duties, and all services provided by the University. Although there is no PSP Thesis Handbook, the students claimed that during the first two semesters they have had many projects which helped them to be familiar with the scientific way of writing and the existing databases. This is very important, especially for students who did not write a thesis during their undergraduate studies because it was not mandatory.

The PSP students need more incentives for mobility. During the interview with the EEAP, there was not much expressed interest in seeking mobility opportunities. Nevertheless, the teaching staff stated that there is significant students' mobility through research projects, mostly during the PSP thesis development.

III. Conclusions

The PSP has established clear guidelines regarding thesis completion, certification, research ethics, and the award of high-achieving students. Nevertheless, there is a need to promote greater mobility and practical training. A stronger connection between the PSP and the job market should be also considered.

Panel Judgement

Please tick one of the following:

Principle 4: Student admission, progression, recognition of postgraduate studies and certification	
Fully compliant	X
Substantially compliant	

Partially compliant	
Non-compliant	

Panel Recommendations

Please provide your recommendations with regard to issues that need to be addressed, as appropriate.

R4.1 Provide a PSP thesis handbook.

R4.2 Promote mobility and practical training with the domestic and international job market.

R4.3 Seek more mobility opportunities through Erasmus+ programmes and research projects.

PRINCIPLE 5: TEACHING STAFF OF POSTGRADUATE STUDY PROGRAMMES

INSTITUTIONS SHOULD ASSURE THEMSELVES OF THE LEVEL OF KNOWLEDGE AND SKILLS OF THEIR TEACHING STAFF, AND APPLY FAIR AND TRANSPARENT PROCESSES FOR THEIR RECRUITMENT, TRAINING AND FURTHER DEVELOPMENT.

The Institution should attend to the adequacy of the teaching staff of the academic unit teaching at the PSP, the appropriate staff-student ratio, the appropriate staff categories, the appropriate subject areas, the fair and objective recruitment process, the high research performance, the training-development, the staff development policy (including participation in mobility schemes, conferences, and educational leaves-as mandated by law).

More specifically, the academic unit should set up and follow clear, transparent and fair processes for the recruitment of properly qualified staff for the PSP and offer them conditions of employment that recognise the importance of teaching and research; offer opportunities and promote the professional development of the teaching staff; encourage scholarly activity to strengthen the link between education and research; encourage innovation in teaching methods and the use of new technologies; promote the increase of the volume and quality of the research output within the academic unit; follow quality assurance processes for all staff (with respect to attendance requirements, performance, self-assessment, training, etc.); develop policies to attract highly qualified academic staff.

Documentation

- *Procedures and criteria for teaching staff recruitment*
- *Employment regulations or contracts, and obligations of the teaching staff*
- *Policy for staff support and development*
- *Individual performance of the teaching staff in scientific-research and teaching work, based on internationally recognised systems of scientific evaluation (e.g. Google Scholar, Scopus, etc.)*
- *List of teaching staff including subject areas, employment relationship, Institution of origin, Department of origin*

Study Programme Compliance

Please comment on the compliance with the Principle. Specifically: Please describe the findings related to the Principle, analyse, and conclude your judgement. Findings, analysis of judgement and conclusions should be developed below in three distinct parts.

I. Findings

All merit-based criteria and procedures for the recruitment of the teaching staff of the PSP are based on the national standards established by the Ministry of Education and the Greek Parliament. The PSP Sustainable Engineering and Climate Change of the Technical University of Crete selects its teaching staff among members of the School of Chemical and Environmental Engineering placing emphasis on their affiliation with the areas of sustainable development and climate change. External lecturers could be selected based on their research and professional accomplishments.

The PSP offers great opportunities for the teaching staff by giving them access to a pool of young engineers and scientists eager to pursue research in the areas of sustainable engineering and climate change. In fact, many of the students conduct research as part of their theses, and several of them continue on to the doctoral programme of the School.

Staff mobility is encouraged as part of the Erasmus+ programme and through sabbatical leaves of absence. There are no funds provided by the School for travel to conferences; however, the faculty are able to fulfill their obligations by utilizing funds from research projects.

The workload is appropriate and uniform across all ranks. Thus, the teaching responsibilities of the faculty allow adequate time for engagement in research activities.

The link between research and teaching is excellent with the exception of an elective course with emphasis on Earthquake Engineering, which appears to be a relic of a past incarnation of the PSP.

There is a good procedure for the evaluation of the teaching staff by the students through surveys. Actually, some of the courses describe an outstanding list of objectives, outcomes, and methods for their assessment. However, the participation by the students is disheartening. Practically, none of the students and past graduates of the PSP that were interviewed by the EEAP had participated or even knew what the purpose of these surveys is.

The research direction of the faculty is determined by their individual background, interest, and publication record. There is no defined research strategy set by the PSP; however, the research conducted by the faculty is characterized by good quality and quantity.

II. Analysis

The PSP Sustainable Engineering and Climate Change of the Technical University of Crete reflects the individual quality of the teaching faculty of the School of Chemical and Environmental Engineering. Several of the senior faculty members have outstanding research records; thus, the PSP students should be grateful for the opportunity to learn from these scholars. On the other hand, the title and content of many courses correspond to traditional Environmental Engineering courses. Only a small fraction of courses shows an explicit link to sustainability and climate change, albeit at the introductory level.

The student evaluation process is dysfunctional. The faculty believes that this is due to student indifference while the students claim that their opinions are never taken into consideration. The EEAP found that there is a misunderstanding on both sides because the importance and enforcement of course and instructor

evaluation have never been explained, documented, or advertised.

There is no formal mentoring process or institutional support method for junior faculty. The School believes that this is due to the lack of appropriate central government laws; however, there are no laws that prohibit a good School from mentoring and providing funds targeted to junior faculty.

III. Conclusions

The teaching staff of the PSP Sustainable Engineering and Climate Change of the Technical University of Crete is a group of outstanding researchers who have the opportunity to offer a graduate programme of unique importance and quality. In its present rebranding, the programme deals with the urgent need of society to address problems associated with sustainability and climate change that are critically important to society. However, the course titles and syllabi do not reflect these issues and thus should be modified. The course evaluation process must be rebuilt from its foundation. Finally, the PSP should find better methods for mentoring and supporting its junior faculty.

Panel Judgement

Please tick one of the following:

Principle 5: Teaching staff of postgraduate study programmes	
Fully compliant	
Substantially compliant	X
Partially compliant	
Non-compliant	

Panel Recommendations

Please provide your recommendations with regard to issues that need to be addressed, as appropriate.

R5.1 Reconsider the course/instructor evaluation process.

R5.2 Educate the students regarding the value of evaluation and assessment to both the programme and their careers.

R5.3 Convince the faculty that low participation in the evaluation is not the fault of the students but the programme's inability to engage the students.

R5.4 Establish a formal mentoring process for junior faculty and seek resources for their

support.

PRINICPLE 6: LEARNING RESOURCES AND STUDENT SUPPORT

INSTITUTIONS SHOULD HAVE ADEQUATE FUNDING TO COVER THE TEACHING AND LEARNING NEEDS OF THE POSTGRADUATE STUDY PROGRAMME. THEY SHOULD –ON THE ONE HAND- PROVIDE SATISFACTORY INFRASTRUCTURE AND SERVICES FOR LEARNING AND STUDENT SUPPORT, AND – ON THE OTHER HAND- FACILITATE DIRECT ACCESS TO THEM BY ESTABLISHING INTERNAL RULES TO THIS END (E.G. LECTURE ROOMS, LABORATORIES, LIBRARIES, NETWORKS, NETWORKS, CAREER AND SOCIAL POLICY SERVICES ETC.).

Institutions and their academic units must have sufficient resources and means, on a planned and long-term basis, to support learning and academic activity in general, so as to offer PSP students the best possible level of studies. The above means include facilities such as the necessary general and more specialised libraries and possibilities for access to electronic databases, study rooms, educational and scientific equipment, IT and communication services, support and counselling services.

When allocating the available resources, the needs of all students must be taken into consideration (e.g. whether they are full-time or part-time students, employed students, students with disabilities), in addition to the shift towards student-centred learning and the adoption of flexible modes of learning and teaching. Support activities and facilities may be organised in various ways, depending on the institutional context. However, the internal quality assurance proves -on the one hand- the quantity and quality of the available facilities and services, and -on the other hand- that students are aware of all available services.

In delivering support services, the role of support and administration staff is crucial and therefore this segment of staff needs to be qualified and have opportunities to develop its competences.

Documentation

- *Detailed description of the infrastructure and services made available by the Institution to the academic unit for the PSP, to support learning and academic activity (human resources, infrastructure, services, etc.) and the corresponding firm commitment of the Institution to financially cover these infrastructure-services from state or other resources*
- *Administrative support staff of the PSP (job descriptions, qualifications and responsibilities)*
- *Informative / promotional material given to students with reference to the available services*
- *Tuition utilisation plan (if applicable)*

Study Programme Compliance

Please comment on the compliance with the Principle. Specifically: Please describe the findings related to the Principle, analyse, and conclude your judgement. Findings, analysis of judgement and conclusions should be developed below in three distinct parts.

I. Findings

For the needs of the PSP, there are three classrooms available, two of which have been equipped using funds from the programme's revenue. Two are large, while the third has a capacity of 30 people. Students have access to the Campus library (both physical and digital), international databases, and more. The e-class platform is used for courses, where all course materials are uploaded. Additionally, with the help of cameras, microphones, and other equipment in the classrooms, lectures are delivered live to remote students via Zoom and MS

Teams platforms.

The laboratories are equipped with modern facilities and play a fundamental role in the educational process. They are also widely used by many students during the preparation of their PSP thesis. The University also offers a wide range of services, primarily for on-campus students, which are detailed in the Study Guide posted on the PSP site.

Tuition fees, as outlined in the Tuition Fee Utilization Plan, are essential for the smooth operation of the programme, as they constitute its primary source of revenue.

II. Analysis

Discussions with current PSP students revealed that they are fully satisfied with the programme's administrative staff, consisting of two members, stating that their needs are always met promptly. The programme's administration and teaching staff often admit fewer than 30 students to maintain the programme's quality. However, this significantly reduces revenue, making it insufficient to cover all the programme's needs. For this reason, while tuition fees were €1,500 (€500 per semester) at the time all documentation was submitted for evaluation and accreditation, they are now €3,000 (€1,000 per semester). During the EEAP discussion with the PSP administration, the possibility of enrolling students per semester rather than annually was mentioned as another measure to increase revenue.

Students suggested that expanding asynchronous learning (e.g., through lecture recordings) without reducing real-time classes, would greatly benefit working students and international students from countries with significant time differences. Currently, all lectures are conducted exclusively in real-time.

III. Conclusions

The well-equipped classrooms, modern laboratories, and dedication of the teaching and administrative staff ensure the smooth operation of this hybrid programme. Measures to increase revenue have already been taken through the tuition fee increase, which should be re-evaluated if application numbers decline. Adopting measures to expand asynchronous education would significantly support students and likely increase international students' interest in the programme.

Panel Judgement

Please tick one of the following:

Principle 6: Learning resources and student support	
Fully compliant	X
Substantially compliant	
Partially compliant	
Non-compliant	

Panel Recommendations

Please provide your recommendations with regard to issues that need to be addressed, as appropriate.

R6.1 Expand asynchronous learning to facilitate students and attract more international applicants who reside in different time zones.

R6.2 Assess the potential impact of the tuition fee increase on the number of applicants.

PRINCIPLE 7: INFORMATION MANAGEMENT

INSTITUTIONS BEAR FULL RESPONSIBILITY FOR COLLECTING, ANALYSING AND USING INFORMATION, AIMED AT THE EFFICIENT MANAGEMENT OF POSTGRADUATE STUDY PROGRAMMES AND RELATED ACTIVITIES, IN AN INTEGRATED, EFFECTIVE AND EASILY ACCESSIBLE WAY.

Institutions are expected to establish and operate an information system for the management and monitoring of data concerning students, teaching staff, course structure and organisation, teaching and provision of services to students.

Reliable data is essential for accurate information and decision-making, as well as for identifying areas of smooth operation and areas for improvement. Effective procedures for collecting and analysing information on postgraduate study programmes and other activities feed data into the internal system of quality assurance.

The information collected depends, to some extent, on the type and mission of the Institution. The following are of interest:

- *key performance indicators*
- *student population profile*
- *student progression, success, and drop-out rates*
- *student satisfaction with their programmes*
- *availability of learning resources and student support*

A number of methods may be used to collect information. It is important that students and staff are involved in providing and analysing information and planning follow-up activities.

Documentation

- *Report from the National Information System for Quality Assurance in Higher Education (NISQA) at the level of the Institution, the department, and the PSP*
- *Operation of an information management system for the collection of administrative data for the implementation of the PSP (Students' Record)*
- *Other tools and procedures designed to collect data on the academic and administrative functions of the academic unit and the PSP*

Study Programme Compliance

Please comment on the compliance with the Principle. Specifically: Please describe the findings related to the Principle, analyse, and conclude your judgement. Findings, analysis of judgement and conclusions should be developed below in three distinct parts.

I. Findings

The Technical University of Crete has developed information systems through which all Schools, and by extension all Postgraduate Studies Programmes, collect information regarding students' performance and progression, students' participation in each course, as well as monitor the students' course of study, etc. Students and teaching staff members have access to individual student register through the electronic secretariat system, which allows each student to obtain all information regarding his/her studies, as well as to submit various requests electronically.

The Institution via its QAU/MODIP (<https://www.modip.tuc.gr/el/archi>) maintains a comprehensive information system for data collection and recording, used for the annual report to the National Information System for Quality Assurance in Higher Education (NISQA) relative to key indicators following procedures established by HAHE.

The PSP utilizes information management platforms for the collection and processing of data concerning students and their progress through the PSP. Student course/instructor evaluation and satisfaction questionnaires are collected by the School OMEA electronically using the central Information System of the University MODIP (<https://evaluation.tuc.gr>). Aggregated data and results of statistical analysis by the MODIP office are communicated to the School, PSP, as well as on an individual basis, i.e., per course and per teaching staff member. Current PSP students and graduates expressed satisfaction for their ability to access information relevant to their studies.

II. Analysis

The PSP utilizes the information collection and processing platforms that support the School, which are related to the evaluation of students' educational work, along with PSP number of applicants, number of active students, grades, number of graduates. Student satisfaction surveys are conducted each semester. Faculty evaluate the results and consider them for self-evaluation and self-improvement. However, the extent to which students participate in the course/instructor evaluation process is extremely low. The EEAP during the interview with both PSP students and graduates sensed a general reluctance by the students to participate in the course/instructor evaluation process more actively. Additional efforts by the PSP teaching staff members should be made to better inform the students relative to the value and significance of the evaluation process.

Key Performance Indicators regarding student population profile, student progress and satisfaction are collected, and the information is analysed annually. The EEAP did not identify a specific mechanism for the systematic assessment and continuous improvement of the PSP based on students' and external stakeholders' input, as well as documentation related to the implementation of such input.

There are no procedures for monitoring the employability and progress of graduates, nor has a PSP alumni association been established.

III. Conclusions

The PSP collects data and presents the results in quantifiable performance indicators relative to the programme. The data are used in the preparation of internal evaluation reports and the continuous improvement of the PSP. Students' participation in the course/instructor evaluation process is extremely low. Implementation of students' and external stakeholders' input is not documented.

Panel Judgement

Please tick one of the following:

Principle 7: Information management	
Fully compliant	
Substantially compliant	X
Partially compliant	
Non-compliant	

Panel Recommendations

Please provide your recommendations with regard to issues that need to be addressed, as appropriate.

R7.1 Increase student participation in the course/instructor evaluation process.

R7.2 Major improvements made as a result of course/instructor evaluations, as well as feedback by graduates and external stakeholders should be documented, communicated to all involved, and published on the PSP website.

PRINCIPLE 8: PUBLIC INFORMATION CONCERNING THE POSTGRADUATE STUDY PROGRAMMES

INSTITUTIONS SHOULD PUBLISH INFORMATION ABOUT THEIR TEACHING AND ACADEMIC ACTIVITIES RELATED TO THE POSTGRADUATE STUDY PROGRAMMES IN A DIRECT AND READILY ACCESSIBLE WAY. THE RELEVANT INFORMATION SHOULD BE UP-TO-DATE, OBJECTIVE AND CLEAR.

Information on the Institutions' activities is useful for prospective and current students, graduates, other stakeholders, and the public.

Therefore, Institutions and their academic units must provide information about their activities, including the PSP they offer, the intended learning outcomes, the degrees awarded, the teaching, learning and assessment procedures applied, the pass rates, and the learning opportunities available to their students. Information is also provided on the employment perspectives of PSP graduates.

Documentation

- *Dedicated segment on the website of the department for the promotion of the PSP*
- *Bilingual version of the PSP website with complete, clear and objective information*
- *Provision for website maintenance and updating*

Study Programme Compliance

Please comment on the compliance with the Principle. Specifically: Please describe the findings related to the Principle, analyse, and conclude your judgement. Findings, analysis of judgement and conclusions should be developed below in three distinct parts.

I. Findings

The TU Crete website <https://www.tuc.gr/en/home> points to a secure website for the School of Chemical and Environmental Engineering in both Greek and English <https://www.chenveng.tuc.gr/en/home>. The School website contains a wide range of information, logically organised under major pulldown menus: Home; School; Studies; Research; Personnel; News, alongside links to social media presence. The website contains comprehensive material regarding the structure and organization of the School, such as, procedures and regulations for undergraduate, postgraduate and doctoral studies, educational activities, programmes of study at undergraduate and postgraduate level, staff information (e.g., web pages of faculty members, research fields/projects, etc.), as well as services offered to students and academic staff. Announcements concerning the academic activity of the School are posted on the respective sections of the website alongside announcements of general interest. In addition to the School's website each Laboratory and the majority of the faculty members have developed web pages specific to their subjects and activities, some with impressive videos.

II. Analysis

The PSP in Sustainable Engineering and Climate Change is promoted very eminently in the School website with a well-designed graphic, clear font indicative button inviting visitors to "Click for more". The dedicated PSP website presents information about teaching and academic activities in a clear and comprehensive way. It is the main way for providing information to both current and prospective students as well as anyone interested in the PSP. The pages have a legible layout with clear font and plain background, easy to navigate between the different

topics. The website offers detailed information on the available PSP courses and for each course, information on the instructors, recommended reading, objectives, syllabus, workload, and assessment methods. The PSP website also has information on the fees, course credits, applications, leading to a page listing the required documents and linking to the online application system. In addition to the various information events for the undergraduate and postgraduate programmes the School maintains various social media accounts with thousands of followers for directly informing students and members of the academic and practice communities about the activities to a wider audience.

III. Conclusions

The PSP in Sustainable Engineering and Climate Change complies fully with the HAHE requirements of Principle 8. There is ample information on Procedures, Guidelines and Templates for postgraduate students with a dedicated page providing links to all the necessary documents. Overall, the School webpages provide a lot of information, both in Greek and in English, in clear and straightforward linguistic style. The School and PSP website are up to date, maintained/updated on a regular basis.

Panel Judgement

Please tick one of the following:

Principle 8: Public information concerning the postgraduate study programmes	
Fully compliant	X
Substantially compliant	
Partially compliant	
Non-compliant	

Panel Recommendations

Please provide your recommendations with regard to issues that need to be addressed, as appropriate.

There are no recommendations for Principle 8.

PRINCIPLE 9: ON-GOING MONITORING AND PERIODIC INTERNAL EVALUATION OF POSTGRADUATE STUDY PROGRAMMES

INSTITUTIONS AND ACADEMIC UNITS SHOULD HAVE IN PLACE AN INTERNAL QUALITY ASSURANCE SYSTEM FOR THE AUDIT AND ANNUAL INTERNAL REVIEW OF THEIR POSTGRADUATE STUDY PROGRAMMES, SO AS TO ACHIEVE THE OBJECTIVES SET FOR THEM, THROUGH MONITORING AND POSSIBLE AMENDMENTS, WITH A VIEW TO CONTINUOUS IMPROVEMENT. ANY ACTIONS TAKEN IN THE ABOVE CONTEXT SHOULD BE COMMUNICATED TO ALL PARTIES CONCERNED.

The regular monitoring, review, and revision of postgraduate study programmes aim at maintaining the level of educational provision and creating a supportive and effective learning environment for students.

The above comprise the evaluation of:

- a) the content of the programme in the light of the latest research in the given discipline, thus ensuring that the PSP is up to date*
 - b) the changing needs of society*
 - c) the students' workload, progression and completion of the postgraduate studies*
 - d) the effectiveness of the procedures for the assessment of students*
 - e) the students' expectations, needs and satisfaction in relation to the programme*
 - f) the learning environment, support services, and their fitness for purpose for the PSP in question*
- Postgraduate study programmes are reviewed and revised regularly involving students and other stakeholders. The information collected is analysed and the programme is adapted to ensure that it is up-to-date.*

Documentation

- *Procedure for the re-evaluation, redefinition and updating of the PSP curriculum*
- *Procedure for mitigating weaknesses and upgrading the structure of the PSP and the learning process*
- *Feedback processes concerning the strategy and quality goal setting of the PSP and relevant decision-making processes (students, external stakeholders)*
- *Results of the annual internal evaluation of the PSP by the Quality Assurance Unit (QAU), and the relevant minutes*

Study Programme Compliance

Please comment on the compliance with the Principle. Specifically: Please describe the findings related to the Principle, analyse, and conclude your judgement. Findings, analysis of judgement and conclusions should be developed below in three distinct parts.

I. Findings

The PSP Sustainable Engineering and Climate Change provides an impressive list of measures for its self-assessment. The outcomes of these measures are recorded and submitted to the QAU/MODIP of the Technical University of Crete, and the findings of the self-assessment are shared within the academic unit. There is also an exhaustive list of feedback mechanisms for the continuous improvement of the programme. If properly implemented, the self-assessment measures should provide valuable data to the teaching faculty and the director of the PSP.

During the interview of current and past students, it became clear that they were never engaged in the design, evaluation or annual assessment of the PSP. There is no exit interview or questionnaire at the time of graduation. Graduates also indicated that they were never contacted at set intervals following the completion of their studies. The same students stated that they value and respect the programme, thus there is a serious disconnect between the students and the administration of the PSP. Finally, the students indicated that they would be happy to participate in mid-term course evaluations, which can potentially impact on the quality of the course in real time and thus allow the students to experience the benefits of their own suggestions.

II. Analysis

The monitoring and evaluation of the PSP has a long list of procedures for self-assessment and its continuous improvement; however, this appears to be meaningless since the students do not participate in the evaluation process at any significant level. The EEAP has found that this is a cultural problem that is casually dismissed. It is the responsibility of the faculty to create an environment of trust, in which the students will be convinced that their suggestions will be given serious consideration. Presently, the students believe that their recommendations are either ignored or, if adopted by the faculty, can only improve the studies of future students.

There is no formal mechanism for feedback by PSP graduates and external stakeholders as well as systematic implementation of such input aiming at the continuous improvement of the PSP.

III. Conclusions

The PSP uses a comprehensive process for student monitoring and course/instructor evaluation. However, its practical implementation is hindered by the lack of participation by the students. This is a serious problem that requires immediate attention. Additional measures should be taken for systematic feedback by PSP graduates and external stakeholders and its implementation in the PSP's periodic internal evaluation.

Panel Judgement

Please tick one of the following:

Principle 9: On-going monitoring and periodic internal evaluation of postgraduate study programmes	
Fully compliant	
Substantially compliant	
Partially compliant	X
Non-compliant	

Panel Recommendations

Please provide your recommendations with regard to issues that need to be addressed, as appropriate.

R9.1 Invite students to participate in the design and modification of the PSP.

R9.2 Conduct an exit interview.

R9.3 Survey graduates of the PSP at set time intervals to record their opinion at various stages of their career.

R9.4 Begin an informal communication effort between students and faculty to inform them about the benefits of evaluation.

R9.5 Create a zero-credit seminar series, given by external speakers, to discuss cultural issues in the academic community.

R9.6 Introduce mid-term course evaluations to improve the quality of instruction in the current semester.

R9.7 Device incentives for student participation in the evaluation process.

R9.8 Develop a formal mechanism for feedback by PSP graduates and external stakeholders, as well as the systematic implementation of such input in the PSP's periodic internal evaluation.

PRINCIPLE 10: REGULAR EXTERNAL EVALUATION OF POSTGRADUATE STUDY PROGRAMMES

THE POSTGRADUATE STUDY PROGRAMMES SHOULD REGULARLY UNDERGO EVALUATION BY PANELS OF EXTERNAL EXPERTS SET BY HAHE, AIMING AT ACCREDITATION. THE TERM OF VALIDITY OF THE ACCREDITATION IS DETERMINED BY HAHE.

HAHE is responsible for administrating the PSP accreditation process which is realised as an external evaluation procedure, and implemented by panels of independent experts. HAHE grants accreditation of programmes, based on the Reports delivered by the panels of external experts, with a specific term of validity, following to which, revision is required. The quality accreditation of the PSP acts as a means for the determination of the degree of compliance of the programme to the Standards, and as a catalyst for improvement, while opening new perspectives towards the international standing of the awarded degrees. Both academic units and Institutions must consistently consider the conclusions and the recommendations submitted by the panels of experts for the continuous improvement of the programme.

Documentation

- *Progress report of the PSP in question, on the results from the utilisation of possible recommendations included in the External Evaluation Report of the Institution, and in the IQAS Accreditation Report, with relation to the postgraduate study programmes*

Study Programme Compliance

Please comment on the compliance with the Principle. Specifically: Please describe the findings related to the Principle, analyse, and conclude your judgement. Findings, analysis of judgement and conclusions should be developed below in three distinct parts.

I. Findings

This is the first time that the PSP Sustainable Engineering and Climate Change is being externally evaluated. In principle, the members of the teaching staff of the PSP seem aware of the importance of the external evaluation and its contribution to the improvement of the programme. The stakeholders of the academic unit are indeed actively engaged in the external evaluation of the PSP. However, there is no formal mechanism for the feedback by PSP graduates and external stakeholders and its implementation. There is no documentation regarding a recently undergone external review conducted by agencies other than HAHE.

Despite these deficiencies in past data, the EEAP is satisfied that the PSP Sustainable Engineering and Climate Change is following the principles of the current standards and the quality assurance procedures of TUC's Internal Quality Assurance System. The EEAP has concluded that the self-assessment of the PSP is founded on procedures that enhance the learning environment of the students and promotes the strategic goals of TUC.

The PSP has not provided any data or processes for addressing the recommendations of the EEAP other than the actions taken by the School of Chemical and Environmental Engineering following its external evaluation in 2022 by HAHE.

II. Analysis

Assimilation of the recommendations by an external advisory committee, such as the EEAP, plays a vital role in the evolution of a graduate programme, especially when the programme is academically sound, and the recommendations are constructive. The PSP on Sustainable Engineering and Climate Change at TUC has the potential to become an outstanding graduate programme if some modifications are made to the curriculum and the course evaluation process. As is often the case, the EEAP has the opportunity to view the programme at a distance, and thus to identify issues that are not easily noticed by the teaching faculty of the PSP. The implementation of these modifications is not easy regardless of how small the changes may be. Furthermore, these modifications may require a change in the culture of the Institution and the students that demands a systematic approach. The PSP faculty are very successful in attracting research projects and writing technical papers due to individual efforts. However, this does not guarantee that the design and operation of the programme will be equally successful when it is implemented by individual efforts. The EEAP observed a significant lack of uniformity in the quality of the course syllabi, evaluation, and assessment. Improvements of these topics can be made only if there is a systematic, centralized process within the PSP that can receive and process the recommendations of external evaluations and enforce them uniformly.

III. Conclusions

The EEAP believes that the external assessment process ought to be given a more serious consideration by the PSP. The assumption of the PSP belief that the positive evaluation of the undergraduate programme will guarantee the success of the PSP is very presumptuous and does not reflect the weaknesses observed currently in the PSP structure and operation. The five-year review conducted by HAHE seems hardly adequate for addressing some of the cultural issues in the programme.

Panel Judgement

Please tick one of the following:

Principle 10: Regular external evaluation of postgraduate study programmes	
Fully compliant	
Substantially compliant	
Partially compliant	X
Non-compliant	

Panel Recommendations

Please provide your recommendations with regard to issues that need to be addressed, as appropriate.

R10.1 Develop a formalized and systematic process for addressing the recommendations of external evaluations.

R10.2 Establish a process for addressing the existing culture for course and instructor evaluation by the students.

R10.3 Develop a formal mechanism for feedback by PSP graduates and external stakeholders, as well as its implementation aiming at the PSP's further development and continuous improvement.

PART C: CONCLUSIONS

I. Features of Good Practice

Please state aspects of good practice identified, with regard to the postgraduate study programme.

-- The PSP has the necessary procedures for monitoring quality assurance and continuous improvement which align with the strategic objectives of the School and the University.

-- Infrastructure and other resources are adequate for the successful operation of the PSP.

-- Faculty and staff are knowledgeable, enthusiastic, and dedicated to the PSP's mission.

-- Employment potential of the PSP graduates in public and/or private positions is high.

-- The PSP and the School maintain a large network of potential employers and stakeholders.

-- Stakeholders and social partners praised the PSP and believe there is a clear need for such graduates.

-- The programme is addressing an area of need in the Greek economy, both at local and national level, as well as globally.

II. Areas of Weakness

Please state weak areas identified, with regard to the postgraduate study programme.

- The rate of students' course/instructor evaluation is very low.

- Limited number of specific and clearly defined key performance indicators (KPIs) relative to students' performance.

- Course content and learning outcomes lack the necessary emphasis on Sustainability and Climate Change.

- Procedures and a mechanism for mentoring and professional development of junior PSP teaching staff were not documented.

- There was no formal, organized involvement of external stakeholders, alumni, etc. in the design of the PSP.

III. Recommendations for Follow-up Actions

Please make any specific recommendations for development.

- Invite students to participate in the design and modification of the PSP.

- Device incentives for student participation in the evaluation process.

- Update course content to emphasize Sustainability and Climate Change.

- Update the specific course learning outcomes in accordance with the European Qualifications Framework level 7.

- Document the findings of annual evaluation audits.

- Increase the number and refine KPIs to set measurable goals, track outcomes, and identify areas for improvement, especially those relative to students' performance.

- Implement mentorship and grantsmanship training programmes for junior faculty.

- Encourage outgoing and incoming mobility of PSP students, faculty, and staff.

- Develop a PSP Alumni Association, track the employability and career paths of PSP

graduates.

-- Develop a formal mechanism of communication with social and industrial partners and other stakeholders to support continuous PSP review, curriculum development, and programme enhancement.

-- Establish a formal PSP External Advisory Board.

IV. Summary & Overall Assessment

The Principles where full compliance has been achieved are:

4, 6, and 8

The Principles where substantial compliance has been achieved are:

1, 2, 3, 5, and 7

The Principles where partial compliance has been achieved are:

9, and 10

The Principles where failure of compliance was identified are:

None

Overall Judgement	
Fully compliant	
Substantially compliant	X
Partially compliant	
Non-compliant	

The members of the External Evaluation & Accreditation Panel

Name and Surname	Signature
PAVLOSTATHIS SPYROS	Signed by PAVLOSTATHIS SPYROS - 24/02/2025 01:07:14 +02:00
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