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Accreditation Report

for the New Postgraduate Study Programme of:

Physics of Atmospheric Environment and Global Change

Department: Physics

Institution: Aristotle University of Thessaloniki

Date: 09/10/2024

Report of the Panel appointed by the HAHE to undertake the review of the New Postgraduate Study Programme of Physics of Atmospheric Environment and Global Change of the Aristotle University of Thessaloniki 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 new postgraduate study programme of Physics of Atmospheric Environment and Global Change of the Aristotle University of Thessaloniki comprised the following five (5) members, drawn from the HAHE Register, in accordance with Laws 4009/2011 & 4653/2020:

1. DIMAKIS NIKOLAOS (NICHOLAS) (Chair)
   (Title, Name, Surname)
   Department of Physics and Astronomy, College of Sciences, University of Texas Rio Grande Valley (UTRGV)
   (Institution of origin)

2. FLYTZANIS CHRISTOS
   (Title, Name, Surname)
   École Normale Supérieure
   (Institution of origin)

3. KONTOGEORGIS GEORGIOS
   (Title, Name, Surname)
   Danmarks Tekniske Universitet (DTU)
   (Institution of origin)

4. SKARLATOS YANI
   (Title, Name, Surname)
   Boğaziçi University
   (Institution of origin)

5. ΡΟΥΠΕΛΗ ΜΑΡΙΑ
   (Title, Name, Surname)
   Hellenic Open University
   (Institution of origin)

II. Review Procedure and Documentation

The Hellenic Authority for Higher Education (HAHE) assembled a qualified external evaluation accreditation panel (EEAP) of experts. This panel was tasked with assessing the compliance of the postgraduate study program (PSP) "Physics of Atmospheric Environment and Global Change" from the Aristotle University of Thessaloniki (AUTh). The EEAP was responsible for drafting an accreditation report in accordance with the HAHE Quality Assurance requirements (laws 4009/2011 & 4653/2020). The PSP assessment was conducted through document reviews and online interviews with academic staff and external stakeholders. The method used was an evidence-based process centered on sampling the PSP's activities. It aimed to evaluate the fulfillment of the HAHE requirements of the relevant PSP quality assurance standards and comment on their compliance, effectiveness, and applicability. The information provided by the PSP was assumed to be factually correct. The evaluation and accreditation meetings with the PSP teaching staff and the external stakeholders, as well as the private meetings between the EEAP members, were conducted remotely using the Zoom platform.

The EEAP convened online for the first time on Monday, 30th September 2024, from 16:00 to 17:00 (Eastern European Time-EET) to facilitate introductions and establish an approach for accreditation procedures. On the same day, the EEAP review of the PSP study program formally began at 17:00 EET. During 17:00–18:00 EET, the EEAP met with Prof. Georgios Tzetzis, Vice-Rector of Academic Affairs Lifelong Learning, International Relations and Outreach /President of MODIP, Prof. Alexandra Ioannidou, Head of the School of Physics, Prof. Iosif Kioseoglou, Vice-Head of the School of Physics, Prof. Makis Angelakeris, Director of the PSP "Advanced Functional Materials", and Prof. Dimitrios Balis, Director of the PSP "Physics of Atmospheric Environment and Global Change". Prof. Kioseoglou provided a brief presentation on the School of Physics and its programs, whereas the PSP directors followed with their presentations on their programs. All of the above were very helpful in addressing EEAP's inquiries.

On October 1, 2024, during 15:40–16:10 EET, the EEAP met with the PSP teaching staff, Prof. Alkiviadis Bais, School of Physics, AUTh, Prof. Dimitrios Melas, School of Physics, AUTh, Prof. Prodromos Zanis, School of Geology, AUTh, Prof. Konstantinos Karatzas, School of Mechanical Engineering, AUTh, Assoc. Prof. Efrosini Giama, School of Mechanical Engineering, AUTh, and Assist. Prof. Charikleia Meleti, School of Physics, AUTh to discuss the PSP professional development opportunities, the mobility, and the teaching methods. Later the same day, during 16:20–16:50 EET, the EEAP met with the PSP chief administrative staff members, Ms. Lefkothea Vigli-Papadaki, Secretary of the School of Physics, Mr. Konstantinos Liakakis, Responsible for the Computer Labs, the PSP "Advanced Functional Materials" staff

members, Prof. George Dimitrakopoulos, Dr. Ariadne Andreadou, Organizational Support, Dr. Nicoleta Florini, Research Lab01, and Dr. Antonios Makridis, Research Lab02, as well as the PSP "Physics of Atmospheric Environment and Global Change" staff members, Dr. Katerina Garane, School of Physics, AUTH, teaching staff member, responsible for the website and the social media of the PSP, Dr. Kalliopi-Artemis Voudouri, teaching staff member, and Prof. Dimitrios Balis, Director of the Laboratory of Atmospheric Physics, School of Physics, AUTh. The EEAP attended a short presentation regarding the PSPs administrative support and online tours of various facilities, such as research laboratories, whereas links to videos were provided to the EEAP.

Afterward, from 17:15–18:00 EET, the EEAP met and discussed professional opportunities and the ties with the PSP with the following employers and social partners of the PSP "Advanced Functional Materials" Dr. Andreana Daniil, Senior Technology Expert, Swiss Center for Business & Technology Intelligence, Switzerland, MSc Electra Papadopoulou, Senior Researcher – Bioeconomy expert, Chimar Hellas S.A, and Dr. Ioannis Mentis, Directorate of Academic Studies, Department of Academic & International Collaborations, Hellenic AirForce, and of the PSP Physics of Atmospheric Environment and Global Change" Dr. Paraskevi Tzoumaka, Municipality of Thessaloniki, Department of Environment and Adaptation to Climate Change, Dr Stylianos Kazadzis, Leader of World aerosol Optical depth Research and Calibration Center at Physikalisch- Meteorologisches Observatorium, Davos, Alexandros Kelesidis, MSc, Environmental Inspector, National Transparency Authority, Greece, and Dr. Evagelos Kosmidis, Founder and Head of Business Development at DRAXIS Environmental S.A. - CEO at Loggerhead VC.

From 18:00 to 18:30 EET, the EEAP held a private meeting to discuss the virtual visit's outcomes and prepare the debriefing report. The closure meeting took place from 18:50 to 19:05 EET, during which the EEAP met with the Director of the PSP, the Vice-Rector of Academic Affairs Lifelong Learning, International Relations and Outreach/President of MODIP, the Head and the Vice-Head of the School of Physics, the MODIP member Konstantinos Papazachos, Professor of Geology, and the MODIP staff Alexandra Tzaneraki, Head of MODIP Secretariat, and Eleni Bitsiadou, MODIP Secretariat. In this final meeting, the EEAP provided an overview of some conclusions.

During the following days (2–8 October 2024), the EEAP received additional information from MODIP and evaluated the content to complete the draft of the accreditation report.

III. Postgraduate Study Programme Profile

The PSP “Physics of Atmospheric Environment and Global Change” was approved by the UATh Rector on December 13, 2024 (protocol number 31731), based on the AUTh Senate approval decision on 3142/29-11-2023. It is expected to admit its first cohort of students in Fall 2025. This PSP is a continuation of the PSP “Environmental Physics”, which commenced in the academic year 1993-94. The PSP Government Gazette Issue law (i.e., “ΦΕΚ”) is pending.

The PSP “Physics of Atmospheric Environment and Global Change” has 15 teaching staff members: 6 permanent faculty (ΔΕΠ) and 2 Laboratory teaching staff (i.e., ΕΔΙΠ) from the School of Physics, AUTh; 1 permanent faculty from the School of Geology, AUTh; 1 permanent faculty and 1 Laboratory teaching staff from the School of Mechanical Engineering, AUTh; 3 postdoctoral researchers, AUTh; and 1 visiting researcher from outside of Greece. The PSP teaching staff have many years of research and teaching experience in the subject related to the PSP and cover a wide range of specialties in Environmental Sciences. They possess the expertise and the ability to teach effectively in the program.

The PSP is a 90-ECTS program with 30 ECTS per semester (i.e., three-semester long). The first semester includes four mandatory courses and one elective course, the second semester two core elective courses and three specialized elective courses, and the last semester is devoted to the Thesis.

Most of the PSP courses will be taught face-to-face. The PSP student learning outcomes include specialization of its graduates in research and management of environmental issues, such as air pollution on a local and global scale, global changes and climate, ecological data analysis, conducting measurements of environmental parameters, drafting Environmental Impact Assessments, specialization in atmospheric models and databases, learning programming languages and specialized software, and developing environmental management and informatics applications, environmental applications and services based on satellite remote sensing, and management tools related to climate change, as well as enhancing student skills in the design and management of research and consulting projects related to the environment.

The PSP is expected to admit 10 students each year. The program's language of instruction will be Greek, but students will have the option of writing their Thesis in English. The PSP

accepts students from Schools of Science, Engineering, Agriculture, Forestry, Natural Environment, and Environmental Studies or related fields from domestic universities or equivalent recognized institutions abroad, as well as graduates of the Hellenic Air Force Academy (Ikaron School) of the Hellenic Military Academies. A minimum grade of 6/10 in the BS degree (i.e., 'ΠΤΥΧΙΟΝ') is required.

There are no tuition or other fees associated with the PSP.

An external committee has not evaluated the PSP before.

PART B: COMPLIANCE WITH THE PRINCIPLES

Principle 1: Strategy, Quality Assurance Policy and Quality Goal Setting for the New Postgraduate Study Programmes

INSTITUTIONS SHOULD INCLUDE IN THEIR STRATEGIC MANAGEMENT THE DEVELOPMENT, ORGANISATION, AND IMPLEMENTATION OF NEW POSTGRADUATE STUDY PROGRAMMES (PSP) IN SPECIFIC SCIENTIFIC FIELDS AFTER INVESTIGATING THEIR FEASIBILITY AND SUSTAINABILITY.
INSTITUTIONS SHOULD APPLY A QUALITY ASSURANCE POLICY FOR THE NEW POSTGRADUATE STUDY PROGRAMMES AS PART OF THEIR STRATEGIC MANAGEMENT.
THIS POLICY SHOULD EXPAND AND BE AIMED (WITH THE COLLABORATION OF EXTERNAL STAKEHOLDERS) AT THE PSP OF THE INSTITUTION AND THE ACADEMIC UNIT. THIS POLICY SHOULD BE PUBLISHED AND IMPLEMENTED BY ALL INTERESTED PARTIES.

By decision/s of the Institutional Senate, the Institutions should adapt their strategy to allow for the provision of postgraduate study programmes, in addition to attending to the profile, vision, mission and strategic objectives of the Institution. In this strategy, the Institutions should anticipate the potential benefits, difficulties or risks from the implementation of new postgraduate study programmes and plan all the necessary actions to achieve their goals. The Institution's strategic choices should be documented through specific feasibility and sustainability studies, especially for new postgraduate study programmes.

In the case of PSP delivered by distance methods, the Institution prepares and applies an e- learning strategy. The Institution's e-learning strategy is integrated into its overall strategy and identifies educational goals while keeping up to the rapid technological changes and to the developments in pedagogical models. The Institution should include in its strategy the justification and feasibility as to why e-learning has been selected as the appropriate learning strategy for the particular programmes of study where it is applied.

In the context of e-learning, innovation strategies, the possibility of programme revision, the linking between learning and research (requiring knowledge of the latest innovations in order to select the most appropriate means to achieve the learning outcomes) should be taken into account.

The quality assurance policy of the academic unit for postgraduate study programmes should be in line with the Institution's strategy 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 postgraduate 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 continuous 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 and the availability 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 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 internal review and audit of the quality assurance system for the PSP through the cooperation of the Internal Evaluation Group (IEG) with the Institution's Quality Assurance Unit (QAU)*

Documentation

- *The Institutional strategy for postgraduate studies, which includes a special strategy for e-learning, as long as it is applied to the Institution's PSP*
- *Feasibility and sustainability studies for the new PSP*
- *Quality Policy of the academic unit for the development and improvement of PSP*
- *Quality Targeting of the academic unit for the PSP*

Study Programme Compliance

I. Findings

The PSP has developed and implemented its quality assurance policy as part of its broader strategy. The learning objectives, outcomes, and qualifications agree with the European and the National Qualifications Framework for Higher Education – level 7. Efforts are being made to promote the high quality and effectiveness of teaching and to equip graduates with skills that allow them to be successful in their careers in the thematic areas of the PSP. The PSP curriculum includes many rigorous courses, most of which are taught by the School of Physics staff with expertise in the relevant subjects, while some classes are taught by non-School of Physics faculty.

The general principles of the PSP curriculum have been designed based on commonly used international standards, and some input has been obtained from external stakeholders.

The PSP will use electronic questionnaires to evaluate students' satisfaction with their courses and use this information to improve them. Historically, the

evaluation percentages of courses for preexisting programs have been relatively low.

The PSP entering students may be from different backgrounds, and thus, the PSP is open to non-physics graduates.

Student performance in some PSP courses includes diverse examination methods (written exams, projects, etc.), whereas others use traditional written exams.

Most PSP teaching staff are well-recognized experts in their fields and show good engagement in externally funded research programs. Teaching and research are effectively linked in the new PSP, primarily via the Thesis.

The program of study aims to continuously improve educational and research activities and provide high-quality services under the HAHE guidelines. The quality assurance policy appears on the program's web page. The institution's Internal Evaluation Group (OMEA), in collaboration with MODIP, oversees the program's internal and external evaluation process.

II. Analysis

The PSP is new and has yet to commence. The EEAP found that the PSP adheres to the Institution's Quality Assurance Policy as part of the AUTh School of Physics' broader strategy, accompanied by key performance indicators (KPIs) with targets for continuous development and improvements.

Teaching staff and administrators appear enthusiastic and committed to ensuring high-quality student support services.

Further development of the curriculum appears to be ad hoc and informal. The same applies to student advisement, but the relatively low number of proposed admitted students in the new PSP will allow close student-faculty collaboration and interaction. There are some established procedures to address student welfare issues.

III. Conclusions

The PSP is committed to continuously improving a quality policy that supports the academic profile and orientation of the curriculum and supports the students and the participating teaching staff.

The structure of the studies facilitates links between research and courses and enhanced interaction with external stakeholders. It considers national and regional economic factors and recent advances in the broader field of the new

PSP. Thus, the PSP is fully compliant with Principle 1.

Panel Judgement

Principle 1: Strategy, Quality Assurance Policy and Quality Goal Setting for the New Postgraduate Study Programmes	
Fully compliant	**X**
Substantially compliant	
Partially compliant	
Non-compliant	

Panel Recommendations

1. The PSP should increase efforts to secure sufficient students in the course evaluation surveys.
2. The PSP should implement diverse examination methods (e.g., written and oral exams, projects, etc.) in all its lecture courses, thus promoting student success.

Principle 2: Design and Approval of New 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 NEW POSTGRADUATE STUDY PROGRAMMES. THE OBJECTIVES, THE SPECIFIC SCIENTIFIC SUBJECT AND THE STREAMS OR SPECIALISATIONS, THE EXPECTED LEARNING OUTCOMES AND THE EMPLOYMENT PROSPECTS ARE SET OUT IN THE PROGRAMME DESIGN. DURING THE IMPLEMENTATION OF THE NEW 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, the specialisations, the expected learning outcomes, the structure, the courses, the teaching and assessment modes, the teaching staff and the necessary resources 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. In particular, for each expected 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 for the 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 NQF, 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: teaching assignments per subject area and per course*

Study Programme Compliance

I. Findings

The PSP on "Physics of Atmospheric Environment and Global Change" aims to train engineering and science graduates in the field to meet the needs of industry and academia in Greece and abroad. The program targets to train students to conduct research and advance their knowledge in the fields of related to the PSP.

The PSP has developed the curriculum and course syllabi and their contents in accordance with the institution's relevant policies. These were based on the curriculum of the existing PSP, "Environmental Physics", and have been revised accordingly.

The MODIP conducted an internal evaluation of the PSP on 26/2/2024. The PSP program of study has been developed using similar programs within Greece and the EU.

II. Analysis

The PSP curriculum resembles programs comparable to those of Greek and EU universities. Its design is based on the needs of the national and international materials markets and conforms to Level 7 of the European and National Qualifications Framework for Higher Education.

The program of studies consists of core courses providing the basics in the field, followed by specialized courses leading to the front lines of the relevant subjects and aiming to prepare students for research. A research-oriented Thesis on a specialized subject concludes the program of studies.

The EEAP found that all necessary documentation describing the program, including the Senate decision for its establishment, curriculum, list of teaching staff, study guide, and course and thesis descriptions, has been provided.

PSP improvements are based on the student evaluation data, which are discussed at the end of each semester.

III. Conclusions

The PSP has been designed and approved to comply with HAHE requirements.

Panel Judgement

Principle 2: Design and Approval of New Postgraduate Study Programmes	
Fully compliant	**X**
Substantially compliant	
Partially compliant	
Non-compliant	

Panel Recommendations

None.

Principle 3: Regulations for 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).

The Institution should develop and publish the internal regulations prescribed by law which, among other things, should regulate all issues of postgraduate studies from the beginning to the end of the studies.

Indicatively:

- *The students' 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*

In case that the PSP is offered through distance learning methods, the Institution should have in place a regulation for e-learning, including in particular the following issues:

- *Services of the Institution to support e-learning*
- *Methodology for the development and implementation of courses*
- *Ways of providing teaching and variety of teaching and assessment modes*
- *General standard of course structure*
- *Student support system*
- *Support of faculty/teachers with mandatory e-learning training for new staff members*
- *Technological infrastructures made available by the Institution*
- *Student identity confirmation system (student identity check, assignment and exam writing process, security and certification issues).*
- *The Institution should establish rules for the provision of appropriate access and for the assurance of the participation of students affected by disability, illness, and other special circumstances.*
- *Ethical issues, such as those concerning data protection, intellectual property rights and rules for protection against fraud are governed by the e-learning regulation.*

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

Documentation

- *Internal regulation for the operation of the postgraduate study programme*
- *Special regulation for the implementation of e-learning if the PSP is delivered through distance methods*
- *Research Ethics Regulation*

- *Regulation of studies, internship, mobility, and student assignments*
- *Degree certificate template and Diploma Supplement template*

Study Programme Compliance

I. Findings

The Study Guide contains all regulations and procedures, as well as the structure and design of the PSP. Ten (10) students are expected to enroll in the PSP annually, which is small for the allocated personnel and equipment resources. Graduates from STEM and Engineering fields of study are eligible for admission.

This PSP has yet to start, but it is a continuation and further development of the existing PSP "Environmental Physics", which has been running for almost 20 years.

The PSP has a well-defined mechanism for student admission. The applicants are selected based on a well-thought-out system using the students' undergraduate grades, having passed several relevant courses, and, in some cases, candidates' interviews by an established academic committee. These procedures are clearly described in the required supporting documents, which also contain information on the students' rights and obligations and ways to monitor their progression.

The Academic Advisor" is included in the PSP structure.

Research ethics regulations, regulations of studies, internships, mobility, and student assignments are also provided. Most of the courses are taught face-to-face. However, the PSP has hybrid teaching capabilities and live and remote lecture broadcasts.

Overall, student progression is monitored using a centralized tracking system and includes the OMEA.

The duration of the PSP is one and a half years (three semesters, 90 ETCS in total). Students are evaluated at the end of each semester and are required to write a research-based thesis at the last semester of their studies. A few of those Theses are conducted in collaboration with industry and other external partners.

PSP graduates can be employed in the public and private sectors (e.g., research institutes, private companies, etc.) or pursue a Ph.D. The PSP provides both theoretical courses and practical training in labs.

II. Analysis

This PSP provides an important and interesting basis for further studies related to the PSP. Soft skills are also emphasized.

The EEAP found that the proposed number of 10 newly admitted students could be higher for the resources allocated to this PSP.

The EEAP meeting with employers and PSP social partners gave a positive impression of the PSP's quality. All participants were enthusiastic and positive concerning their experience and knowledge of the PSP, the specific PSP, and the quality of the teaching staff. Several employers are School of Physics graduates with essential private sector positions. There is extensive collaboration and communication between many employers, the School of Physics, and the PSP.

This PSP will be taught in Greek, whereas some course materials are in English. The courses mostly use international literature (books, articles) and there are no tuition fees.

The students will be expected to evaluate their courses via online questionnaires. Experiences from the previous PSP on "Environmental Physics" and other PSPs of the same department show that the response rate is relatively low (less than 50%).

Students are given various opportunities for mobility via the Erasmus+ program, but this is mostly used for the diploma Thesis during the last semester of studies.

The degree certificate is provided electronically to the students upon completion of PSP, in both Greek and English. This includes the diploma Supplement (in both Greek and English) listing all courses attended and the grades achieved.

There is evidence that the PSP students will continue the established tradition of high-quality Theses found in the PSP "Environmental Physics" its predecessor.

The EEAP considers the length of studies and the help from the School of Physics to the future students of this PSP satisfactory.

III. Conclusions

Although the PSP has yet to start receiving students, it is well-organized and designed in the fields of Physics of Atmospheric Environment and Global Change. It has been successfully running in a similar format for many years and is expected to succeed in the new format.

The different modules and the laboratories significantly help and boost the students' training, and they are considered satisfactory, as is the length of the studies for graduation.

Panel Judgement

Principle 3: Regulations for Student Admission, Progression, Recognition of Postgraduate Studies, and certification	
Fully compliant	**X**
Substantially compliant	
Partially compliant	
Non-compliant	

Panel Recommendations

1. The PSP must increase the number of newly admitted students to the program to justify the resources used.
2. The PSP could increase efforts to enhance student mobility via the Erasmus+ program and for coursework purposes.

Principle 4: Teaching Staff of New 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 and scientific competence of the teaching staff at the PSP, the appropriate staff-student ratio, the proper staff categories, the appropriate subject areas, the fair and objective recruitment process, the high research performance, the training, 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, policy for attracting highly qualified staff, and PSP Obligation Regulation*
- *List of the intended for recruitment teaching staff including subject areas, employment relationship, Institution of origin, Department of origin and relevant individual achievements*

Study Programme Compliance

I. Findings

The PSP has faculty members from the AUTh School of Physics, but some Emeriti and guest professors are also involved. All are highly qualified to provide excellent instruction in the new PSP. The EEAP found that the teaching staff is of highly quality, enthusiastic, and passionate about their teaching and constructive interaction with the students.

The PSP teaching staff is selected based on past research productivity in areas related to the PSP and their access to modern research equipment.

The PSP provides opportunities for the professional development of its faculty and strengthens the ties between research and teaching, but it is not commonly

used by eligible faculty.

Overall, the teaching staff's workload, which includes their obligations in the graduate program, is acceptable.

The faculty research and publication records, as compiled from the Scopus citation database, indicate a satisfactory productivity rate (95 articles/faculty (total) and 21 articles/faculty over the last 5 years (2019-2023 and H=21). These metrics are indicators of the new PSP's success and link to research. Overall, there is significant success in attracting externally funded grants.

There are some links between teaching and research in some PSP courses, especially at the Thesis stage. The teaching staff is evaluated through student surveys, but historically student participation is relatively low in the existing PSPs. The evaluation results are communicated to the teaching staff at the end of each semester.

II. Analysis

The hiring of PSP teaching staff is based on the fit of the faculty's research area with the PSP. Moreover, some teaching staff has laboratory resources that are essential for the PSP students, whereas others have strong collaborations with the industry, as well as other institutions abroad.

The teaching load is appropriate to support the new PSP. However, engaging 15 faculty for only 10 newly admitted students per year seems not entirely balanced.

III. Conclusions

The PSP is fully compliant with the Principle 4.

Panel Judgement

Principle 4: Teaching Staff of New Postgraduate Study Programmes	
Fully compliant	**X**
Substantially compliant	
Partially compliant	
Non-compliant	

Panel Recommendations

1. The PSP should encourage professional development opportunities to faculty, such as Sabbatical Leave and training in modern pedagogical approaches and best practices suited to its students.
2. There should be a reasonable balance of the number of teaching staff relative to the PSP number of students.

Principle 5: Learning Resources and Student Support

INSTITUTIONS SHOULD HAVE ADEQUATE FUNDING TO COVER THE TEACHING AND LEARNING NEEDS OF THE POSTGRADUATE STUDY PROGRAMMES. 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, 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 and foreign students, students with disabilities), in addition to the shift towards student-centered 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

I. Findings

The PSP is offered without tuition and other fees, and government sources and external funding effectively cover its funding.

Operating under the AUTh School of Physics, the PSP provides students with facilities that include lecture rooms and specially equipped laboratories, ideal for meeting its educational needs.

The PSP students have various options for staying informed about School of Physics news, course updates, and any other information they need. The School of Physics provides administrative support for the PSP, and the PSP has an Academic Advisor who assists students throughout their studies.

Students have access to physical and digital libraries, online databases, and databases related to their study programs.

The PSP facilities are accessible to students with disabilities.

II. Analysis

The program's funding sources include resources from Research Programs and the Special Account for Research Funds (ΕΛΚΕ).

The laboratories and measuring instruments presented during the tour to the evaluation panel are sufficient for the PSP.

Students can receive updates and information related to their studies, particularly news or changes in the program and daily announcements, through internal communications (emails, notifications from the administration office), the program's active social media channels, or the website, which is updated promptly.

The Academic Advisor assists the students with daily issues they may encounter and guides their studies. This advisor can help with course scheduling, class updates, and other related matters.

III. Conclusions

The PSP fulfills the requirements for facilities, infrastructure, and educational resources (including laboratories, classrooms, libraries, etc.) and appears well-equipped to address students' needs regarding learning resources and support.

Panel Judgement

Principle 5: Learning Resources and Student Support	
Fully compliant	**X**
Substantially compliant	
Partially compliant	
Non-compliant	

Panel Recommendations

1. The PSP should ensure that students with disabilities have equal opportunities to participate in the program and fulfill the student learning outcomes.

Principle 6: Initial Internal and External Evaluation and Monitoring of New Postgraduate Study Programmes

INSTITUTIONS AND ACADEMIC UNITS SHOULD HAVE IN PLACE AN INTERNAL QUALITY ASSURANCE SYSTEM, FOR THE AUDIT, INTERNAL AND EXTERNAL EVALUATION OF THE NEW POSTGRADUATE PROGRAMMES, THUS ENSURING COMPLIANCE WITH THE PRINCIPLES OF THE PRESENT STANDARDS. ANY ACTIONS TAKEN IN THE ABOVE CONTEXT SHOULD BE COMMUNICATED TO ALL PARTIES CONCERNED.

The internal evaluation of the new PSP includes the assessment of the accreditation proposal, as well as the documentation in accordance with the Principles of the present Standards and the quality procedures of the Institution's Internal Quality Assurance System (IQAS). The internal evaluation of new postgraduate study programmes also aims at maintaining the level of educational provision and creating a supportive and effective learning environment for students. The Institution, through its Quality Assurance Unit (QAU) and the corresponding academic units, organise and support the external evaluation procedures of the new PSP, according to the specific guidelines and directions provided by HAHE.

The above comprise the assessment of:

- *the objectives, content, and structure of the curriculum, the knowledge offered and the level of science and technology in the given discipline, thus ensuring that the PSP is up to date, according to the relevant documentation listed in the decisions of the pertinent bodies*
- *the entailed students' workload for the progression and completion of postgraduate studies*
- *the satisfaction of the students' expectations and needs in relation to the programme*
- *the learning environment, support services, and their fitness for purpose for the PSP in question*

Postgraduate study programmes are designed and established in accordance with the provisions of the Institution's internal regulations, involving students and other stakeholders.

Documentation

- *The Quality Assurance Unit (QAU) procedure for verifying whether the requirements of the Standards for Quality Accreditation of New PSP are met, as well as the procedure for organising and supporting their external evaluation procedures*
- *Assessment and feedback mechanisms of the PSP strategy and quality targeting, and relevant decision-making processes (students, external stakeholders)*

Study Programme Compliance

I. Findings

The PSP underwent an internal evaluation on 26/2/2024 by the MODIP but has not been evaluated by an external panel before. The PSP has a quality assurance procedure in place, as well as KPIs with set target values. Students' evaluations of the PSP courses and their instructors will serve as an assessment for PSP improvements. These evaluations will serve as a feedback mechanism for the PSP, whereas the PSP will get additional feedback from stakeholders on an informal basis. The EEAP found that the PSP teaching staff knows the importance of internal and external evaluation and accreditation and its contribution to the PSP improvements.

II. Analysis

The current evaluation is the PSP's first external accreditation review. The EEAP found that the PSP faculty and supporting staff were constructive in answering the panel's questions during the current review. Moreover, they showed that they understand the importance of the accreditation process and the panel's recommendations.

The quality assurance policies of the AUTh, the School of Physics, and the PSP can be found in Greek and English on the PSP's website. These are also communicated to the PSP teaching and administrative staff, the students, and other interested parties.

The student evaluation results will be discussed at the end of each Fall and Spring semester with the students and the teaching staff.

There is no evidence that an External Advisory Board composed of faculty, graduates, and external stakeholders could monitor and assist in the PSP improvements.

III. Conclusions

This is a new PSP expected to commence in Fall 2025. It has undergone internal evaluation and has a quality assurance procedure in place. This is the first external evaluation of the PSP for accreditation purposes. The EEAP found that it is in full compliance with Principle 6.

Panel Judgement

Principle 6: Initial Internal and External Evaluation and Monitoring of New Postgraduate Study Programmes	
Fully compliant	**X**
Substantially compliant	
Partially compliant	
Non-compliant	

Panel Recommendations

1. It is recommended that the PSP establishes an External Advisory Board composed of faculty, graduates, and external stakeholders to improve it.

PART C: CONCLUSIONS

I. Features of Good Practice

1. The PSP is well-designed with defined aims and objectives. It is structured clearly and developed to accommodate topics in Advanced Functional Materials and equip graduates with applied skills to serve the needs of a developing society.
2. Most of the PSP teaching staff are well-known in their fields of expertise.
3. The PSP's external stakeholders and employers highly praise the PSP and its importance.
4. There are several employment prospects for the PSP students in the industry and the academia.
5. The PSP offers excellent laboratory facilities to its students.
6. The PSP is free of tuition and other fees to its students, which contributes to the decrease in the cost of education.

II. Areas of Weakness

1. The PSP lacks an External Advisory Board composed of faculty, graduates, and external stakeholders, which could provide valuable input for its improvements.
2. Historically, student participation in evaluation surveys has been low.
3. Some courses only use written exams for course grading purposes.
4. The number of newly admitted students in PSP is low compared to the number of PSP teaching staff.
5. There is no evidence that AUTh PSP students use the Erasmus+ program for coursework purposes other than Thesis.

III. Recommendations for Follow-up Actions

1. The PSP is recommended to establish an External Advisory Board composed of faculty, graduates, and external stakeholders.
2. The PSP should increase efforts to secure sufficient students in the course evaluation surveys.
3. The PSP should implement diverse examination methods (e.g., written and oral exams, projects, etc.) in all its lecture courses, thus promoting student success.
4. The PSP must increase the number of newly admitted students to the program to justify the resources used.

5. The PSP could increase efforts to enhance student mobility via the Erasmus+ program and for coursework purposes.

IV. Summary & Overall Assessment

The Principles where full compliance has been achieved are:
1,2,3,4,5,6

The Principles where substantial compliance has been achieved are:
.

The Principles where partial compliance has been achieved are:
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The Principles where failure of compliance was identified are:
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Overall Judgement	
Fully compliant	**X**
Substantially compliant	
Partially compliant	
Non-compliant	

The members of the External Evaluation & Accreditation Panel

Name and Surname **Signature**

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