



ΕΛΛΗΝΙΚΗ ΔΗΜΟΚΡΑΤΙΑ
HELLENIC REPUBLIC



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Accreditation Report for the Undergraduate Study Programme of:

Physics
Institution: University of Patras
Date: 28 November 2020



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



Report of the Panel appointed by the HAHE to undertake the review of the Undergraduate Study Programme of **Physics** of the **University of Patras** for the purposes of granting accreditation

TABLE OF CONTENTS

Part A: Background and Context of the Review	4
I. The Accreditation Panel.....	4
II. Review Procedure and Documentation.....	5
III. Study Programme Profile	7
Part B: Compliance with the Principles	9
Principle 1: Academic Unit Policy for Quality Assurance	9
Principle 2: Design and Approval of Programmes.....	11
Principle 3: Student- centred Learning, Teaching and Assessment	13
Principle 4: Student Admission, Progression, Recognition and Certification.....	15
Principle 5: Teaching Staff	17
Principle 6: Learning Resources and Student Support	19
Principle 7: Information Management	21
Principle 8: Public Information	23
Principle 9: On-going Monitoring and Periodic Internal Review of Programmes.....	25
Principle 9: On-going Monitoring and Periodic Internal Review of Programmes.....	25
Principle 10: Regular External Evaluation of Undergraduate Programmes.....	27
Principle 10: Regular External Evaluation of Undergraduate Programmes.....	27
Part C: Conclusions	29
I. Features of Good Practice	29
II. Areas of Weakness.....	29
III. Recommendations for Follow-up Actions.....	29
IV. Summary & Overall Assessment	29

PART A: BACKGROUND AND CONTEXT OF THE REVIEW

I. The External Evaluation & Accreditation Panel

The Panel responsible for the Accreditation Review of the Undergraduate Study Programme of **Physics of the University of Patras** comprised the following four (4) members, drawn from the HAHE Register, in accordance with the Law 4009/2011:

- 1. Prof. Nikolaos Dimakis (Chair),**
University of Texas Rio Grande Valley, USA
- 2. Prof. Dr. Anthimos Georgiadis,**
Leuphana University of Lueneburg, Germany
- 3. Prof. Emeritus Harry Mavromatis,**
American University of Beirut, Lebanon
- 4. Prof. Georgios Palasantzas,**
University of Groningen, The Netherlands

II. Review Procedure and Documentation

The External Evaluation and Accreditation Panel (henceforth the “Panel”) conducted the accreditation and evaluation of the physics undergraduate program at the University of Patras, during the period 23-28 of November 2020. Due to the COVID-19 pandemic, the Panel did not visit the site physically, but conducted the accreditation evaluation via Zoom teleconferencing. On Monday, November 23rd, the Panel attended a Zoom teleconference briefing by HAHE’s General Director Dr. Christina Besta, who outlined and expanded the procedures and the rationale for the accreditation. Dr. Besta’s presentation was sent to the Panel members in advance. From November 26th- 28th the Panel prepared the report using Zoom teleconferencing meetings for its members.

HAHE provided to the Panel the following documentation and supporting material related to the physics undergraduate program:

1. The guidelines for accreditation created by HAHE.
2. The standards for quality accreditation of undergraduate programs created by HAHE.
3. The mapping grid created by HAHE.
4. A tabulation (prepared by HAHE) of the scores of the program regarding the quality indexes for the academic years 2015-2016 to 2018-2019.
5. The accreditation information for the program prepared by the department.
6. A set of annexes to the accreditation proposal, including the study guide, course descriptions, etc.
7. Statistical data regarding the department and the specific program of studies.
8. A set of documents presenting quality indicators both for the department and the program.
9. The 2013 external evaluation report and their recommendations conducted by HQA for the entire Department of Physics and their undergraduate, MS, and Ph.D. programs.
10. The results of the internal evaluation of the undergraduate program.
11. A link to the video tour of the department’s buildings and facilities.

On Tuesday, November 23, the Panel met with the Vice Rector for Academic and Students Affairs and President of the Quality Assurance Unit (MODIP), Prof. Dionissios Mantzavinos and the Head of the Department, Prof. Vassilis Anastassopoulos. After the introductory presentation by the Vice Rector, the Department’s Evaluation Unit (OMEA) coordinator Prof. Georgios Economou gave a presentation on the internal evaluation of the Department of Physics. This presentation included information about 1) the procedure of their internal evaluation, 2) the evaluation of their teaching via student evaluations, 3) the department research productivity, and 4) its overall assessment and goals. The Head of the Department followed up with a short presentation about the history of the department and its organization, the physics undergraduate and graduate programs, and the department infrastructure. Copies of these presentations were provided to the Panel electronically.

During the same day, the Panel met with the teaching staff, listened to their points of view and concerns about the department’s teaching policy and load, their students’ performances, and the procedures of the internal evaluation. The Panel discussed and listened to the teaching

staff's opinions about the students' participations in their teaching evaluations, the attendance in their lecturers, and the continually increasing number of incoming students. After this meeting, the Panel met with physics undergraduate students. The Panel discussed with the students the standards of the overall undergraduate program and the quality of the teaching staff. Specifically, the students discussed the strengths and weaknesses of the study program as they experience it and proposed improvements. Furthermore, the Panel discussed the current status of the dormitory facilities. The day concluded with a Panel debriefing.

On Wednesday, November 24, the day started with a live video tour of selected laboratories and classrooms, followed by a discussion related to the department infrastructure. The Panel observed a large and diverse number of experiments for general physics courses and advanced undergraduate physics courses. The day continued with meetings with former students (i.e., alumni) and social partners. The majority of these former students are now academics employed outside of Greece. They commented on the standards of the undergraduate program and the knowledge gained during their undergraduate studies at the department and how it influenced them in their careers. The social partners commented that several students and graduates from the program have been employed in their companies. The day continued with a Panel debriefing, followed by a second meeting with the OMEA, MODIP, and the Head of the Department. The discussions helped to clarify several points and findings. A closure meeting with the Vice-rector/President of the MODIP and the Head of the Department and OMEA members then took place.

In its deliberations, the Panel took into consideration the items 1-11 stated above, information from the department website, and additional information on external grants provided by the department.

The Panel also drew additional information available on the department's webpage, which is available both in Greek and partially English. The Panel on several occasions requested additional clarifications, all of which were provided by the department. All meetings took place in a cordial and highly professional atmosphere. The faculty, students, and staff were extremely helpful, forthcoming and cooperative, and the overwhelming majority participated with enthusiasm in the accreditation process. The documents provided and the presentations were informative.

The Panel would like to express its appreciation to the Vice Rector Prof. Dionissios Mantzavinos, the Head of the Department Prof. Vassilis Anastassopoulos, Prof. Georgios Economou coordinator of OMEA, and all members of the OMEA and MODIP for their efforts to facilitate the work of the Panel. The Panel is also thankful to all the individuals, who participated in the discussions and presentations of the department.

The input and organization of HAHE is greatly appreciated.

III. Study Programme Profile

The Department of Physics at the University of Patras was established in 1966, about two years after the establishment of the University of Patras, as part of the School of Natural Sciences. In its initial form, it consisted of three distinct Chairs: A, B, and Electronics. These Chairs were abolished in 1982 and since then the department is led by the Head of the Department. Currently, the department has four divisions/sectors as follows: Applied Physics, Condensed Matter Physics, Electronics and Computer Science, and Theoretical & Mathematical Physics and Astronomy and Astrophysics.

The department has 27 full time faculty (13 Professors, 6 Associate Professors, and 8 Assistant Professors) and four more are in the final stages of being hired. About half of these faculty are around 50 years old with the significant majority being male (23 male; 4 female). The faculty distribution in the department's divisions/sectors are as follows: 4 in Applied Physics, 11 in Condensed Matter Physics, 6 in Electronics and Computer Science, and 6 in Theoretical & Mathematical Physics and Astronomy and Astrophysics. Moreover, there are 8 laboratory teaching personnel and 6 administrative and support personnel.

The department offers an undergraduate degree in physics (πτυχιον; BSc). Students must enroll for a minimum of 8 semesters (4 years) and successfully complete 240 European Credit Transfer and Accumulations System (ECTS) units. The majority of the students take 6.2 years to graduate. According to the data provided to the Panel, during the academic years 2015-2016 to 2018-2019, about 22-10% graduated in 4 years ($N = 4$), 19-13% in 5 years ($N+1$), 22-8% in 6 years ($N+2$), and 68-37% in more than 6 years (larger than $N+2$). During 2019-2020, the department produced 101 BSc in Physics graduates. This year (academic year 2019-2020) 207 new students enrolled in the physics undergraduate program. This number is more than double the number requested by the department (about 80-100 new students). However, only about 50% of the incoming students are active in the program, as evidenced by their participation in the course examinations.

The general structure of the undergraduate degree in physics is as follows:

Semesters 1-6: students must successfully complete 32 compulsory courses (180 ECTS), which includes fundamental courses in Physics and Mathematics, as well as laboratory courses (labs only on semesters 1-5 with 4 ECTS for semesters 1-4 and 5 thereafter).

Semesters 7-8: students must successfully complete 8 compulsory and/or elective courses (60 ECTS) from one (or two) focus areas: Electronics, Computer Science and Signal Processing, Energy & Environment, Photonics, Physics of Technology Materials, Theoretical, Computational Physics and Astrophysics, and General (teaching). A diploma thesis (15 ECTS) is optional. Moreover, an optional 3-month practical training to various entities within the Greek public and private sectors is offered every year to students that have completed the 7th semester and beyond. For the academic year 2020-21, 42 students can apply for this training. The optional training is a course of the 8th semester of 5 ECTS, but these units do not count towards the BSc in Physics ECTS.

The department also offers graduate degrees, an MS degree and a Ph.D. degree, all in physics. The number of peer-reviewed publications per faculty is 1.3/year and the external funding is about 850,000 euros for the entire department for the last academic year.

The graduates have different perspectives, to become educators, or work in the industrial areas of telecommunications, electronics, optoelectronics, computational science, materials science, and the environment. Selected graduates from the undergraduate program are currently in universities in Greece and abroad, in tenured and tenure-track positions.

PART B: COMPLIANCE WITH THE PRINCIPLES

Principle 1: Academic Unit Policy for Quality Assurance

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 ALL INSTITUTION'S AREAS OF ACTIVITY, AND PARTICULARLY AT THE FULFILMENT OF QUALITY REQUIREMENTS OF UNDERGRADUATE PROGRAMMES. THIS POLICY SHOULD BE PUBLISHED AND IMPLEMENTED BY ALL STAKEHOLDERS.

The quality assurance policy of the academic unit is in line with the Institutional policy on quality, and is included in a published statement that is implemented by all stakeholders. It focuses on the achievement of special objectives related to the quality assurance of study programmes offered by the academic unit.

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 programme, its purpose and field of study; it will realise the programme's strategic goals and it will determine the means and ways for attaining them; it will implement the appropriate quality procedures, aiming at the programme's continuous improvement.

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

- a) the suitability of the structure and organization of the curriculum;*
- b) the pursuit of learning outcomes and qualifications in accordance with the European and the National Qualifications Framework for Higher Education;*
- c) the promotion of the quality and effectiveness of teaching;*
- d) the appropriateness of the qualifications of the teaching staff;*
- e) the enhancement of the quality and quantity of the research output among faculty members of the academic unit;*
- f) ways for linking teaching and research;*
- g) the level of demand for qualifications acquired by graduates, in the labour market;*
- h) the quality of support services such as the administrative services, the Library, and the student welfare office;*
- i) the conduct of an annual review and an internal audit of the quality assurance system of the undergraduate programme(s) offered, as well as the collaboration of the Internal Evaluation Group (IEG) with the Institution's Quality Assurance Unit (QAU);*

Study Programme Compliance

The University of Patras has already established a quality assurance policy and the corresponding mechanism (MODIP), which follows the HAHE standards. The department quality assurance policy is fully in line with the university's quality assurance policy. Furthermore, the department has published its quality policy outcomes on its home page, presenting its immediate goals, the corresponding steps, and timeframes for their fulfilment. The department quality assurance policy focuses on the achievement of their objectives related to their study programmes. The internal quality procedure is on an annual basis. The department, using the

MODIPs guidelines, which are well developed, publishes its goals and its achievements on its webpage.

The policy of the department supports the study programme, the services and the infrastructure, as well as the allocation of necessary resources for its successful operation. The department leadership, as well as individual staff members, participate in the internal quality assurance system of the university/department (MODIP/OMEA) in order to achieve the continuous improvement of teaching and learning, research, and innovation. The study programme partially implements the integration of the students and staff in cooperative research projects. In principle, the department supports participation in European and worldwide research activities. However, their support is limited.

The Department of Physics is currently respected in Greece and abroad with some of its graduates occupying academic positions in several high-quality institutions abroad. Moreover, the department's faculty are highly cited in research. Finally, the core and elective courses offered are of high quality.

Panel Judgement

Principle 1: Institution Policy for Quality Assurance	
Fully compliant	x
Substantially compliant	
Partially compliant	
Non-compliant	

Panel Recommendations

- The department should develop policies that enhance the support of its faculty's participation in externally funded research and mobility.

Principle 2: Design and Approval of Programmes

INSTITUTIONS SHOULD DEVELOP THEIR UNDERGRADUATE PROGRAMMES FOLLOWING A DEFINED WRITTEN PROCESS WHICH WILL INVOLVE THE PARTICIPANTS, INFORMATION SOURCES AND THE APPROVAL COMMITTEES FOR THE PROGRAMME. THE OBJECTIVES, THE EXPECTED LEARNING OUTCOMES, THE INTENDED PROFESSIONAL QUALIFICATIONS AND THE WAYS TO ACHIEVE THEM ARE SET OUT IN THE PROGRAMME DESIGN. THE ABOVE DETAILS AS WELL AS INFORMATION ON THE PROGRAMME'S STRUCTURE ARE PUBLISHED IN THE STUDENT GUIDE.

Academic units develop their programmes following a well-defined procedure. The academic profile and orientation of the programme, the objectives, the subject areas, the structure and organisation, the expected learning outcomes and the intended professional qualifications according to the National Qualifications Framework for Higher Education are described at this stage. The approval or revision process for programmes includes a check of compliance with the basic requirements described in the Standards, on behalf of the Institution's Quality Assurance Unit (QAU).

Furthermore, the programme design should take into consideration the following:

- *the Institutional strategy*
- *the active participation of students*
- *the experience of external stakeholders from the labour market*
- *the smooth progression of students throughout the stages of the programme*
- *the anticipated student workload according to the European Credit Transfer and Accumulation System*
- *the option to provide work experience to the students*
- *the linking of teaching and research*
- *the relevant regulatory framework and the official procedure for the approval of the programme by the Institution.*

Study Programme Compliance

The Department of Physics offers an undergraduate degree in physics: The degree curriculum is well described in the program of study (odigos spoudon/Study guide) and offers core and elective courses in Physics and in other STEM areas. The undergraduate degree requires 240 ECTS units to be completed in 8 semesters (4 years) and complies with Greek and EU standards. The program is focused on basic and applied science. Students have the option of participating in curriculum changes, via their representatives in the departmental and University committees. However, currently students and other stakeholders' (e.g. schools/companies/industry) participation in the curriculum development appears to be limited. The Department of Physics lacks a procedure for obtaining feedback from its graduates and external stakeholders for curriculum updates and improvements.

The current curriculum structure of the undergraduate program does not clearly highlight the intended professional qualifications of its graduates in order to meet the needs of the labor market. In the case of students intended to become high school teachers, the curriculum lacks the required educational courses, whereas for those seeking industrial employment, it lacks courses that build soft skills.

The current curriculum is unbalanced: There is a high load in the first years, due to the large number of exclusively mandatory courses and/or overall numerous ECTS in these General Physics and STEM courses. This load decreases at later semesters.

The programs links teaching with research via the practical training, the thesis, and the laboratories. However, the first two are optional and the practical training ECTS units do not count towards the degree ECTS units.

Panel Judgement

Principle 2: Design and Approval of Programmes	
Fully compliant	
Substantially compliant	x
Partially compliant	
Non-compliant	

Panel Recommendations

- The department should develop a procedure for obtaining feedback from its graduates and external stakeholders for curriculum updates and improvements.
- The current curriculum should be revised to accommodate the skills needed by the labor market (e.g. required teaching qualifications to teach at high schools).
- The current curriculum should be revised by reducing the load imbalances.

Principle 3: Student- centred Learning, Teaching and Assessment

INSTITUTIONS SHOULD ENSURE THAT THE UNDERGRADUATE PROGRAMMES ARE DELIVERED IN A WAY THAT ENCOURAGES STUDENTS TO TAKE AN ACTIVE ROLE IN CREATING THE LEARNING PROCESS. THE ASSESSMENT METHODS SHOULD REFLECT THIS APPROACH.

Student-centred learning and teaching plays an important role in stimulating students' motivation, self-reflection and engagement 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, enabling 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;*
- *reinforces 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 students' complaints.*

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;*
- *the regulations for assessment take into account mitigating circumstances;*
- *assessment is consistent, fairly applied to all students and carried out in accordance with the stated procedures;*
- *a formal procedure for student appeals is in place.*

Study Programme Compliance

The physics undergraduate program is of high quality in terms of knowledge given to its students. The student guide is complete, concise, appropriate, and provides sufficient information for the students. This guide is available both in Greek and English. However, the program needs to emphasize that it is student centered. The department does not offer sufficient recitation sections, where teaching assistants interact with students, by solving examples of their assignments.

The physics undergraduate program offers several elective courses mostly in the last year, where the students may select from one or two focus areas, thus enhancing their options in

their undergraduate studies. The Panel feels that the number of general courses is relatively excessive.

Undergraduate classes are only taught as face-to-face, whereas due to the COVID-19 pandemic synchronous online instruction has been implemented for both lecturers and laboratories. However, the Panel was unable to find out if new pedagogical methods have been incorporated in the majority of their offered courses (e.g. reverse classroom, peer instruction, etc.). Teaching instruction is evaluated by students via web-based surveys, which are completed online. The student participation in these surveys is low. Every student has an advisor, who monitors their coursework and progress throughout their studies. Moreover, the Panel found that students felt very satisfied with the collegial environment and professionalism of the department faculty. In some cases, multiple faculties evaluate student coursework.

Course assessment criteria are included in the syllabi. However, when multiple examinations take place, individual weights of these assignments were missing in some of the syllabi. Some courses use multiple and diverse examination procedures, which lead to improved student retention. The department has a formal procedure for student appeals in place. Moreover, it follows the University's formal procedure for dealing with cases of students with disabilities (AMEA).

Panel Judgement

Principle 3: Student- centred Learning, Teaching an Assessment	
Fully compliant	
Substantially compliant	x
Partially compliant	
Non-compliant	

Panel Recommendations

- The department should increase the number of recitations for the majority of the undergraduate courses.
- The department should increase the number of courses implementing multiple and diverse examinations (e.g. written and oral exams, group presentations, etc.) and state the individual weights of these assignments in the course's syllabus.
- The department should consider converting some of its lecture courses to reduced seating/hybrid courses format. These courses combine face-to face instruction with online format, by reducing the face-to-face instruction and replacing it by online instruction.
- The department should reduce the number of general courses.
- The department should consider mechanisms for increasing student participation in the course evaluations.

Principle 4: Student Admission, Progression, Recognition and Certification

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

Institutions and academic units need to put in place both processes and tools to collect, manage and act on information regarding student progression.

Procedures concerning the award and recognition of higher education degrees, the duration of studies, rules ensuring students progression, terms and conditions for student mobility should be based on the institutional study regulations. Appropriate recognition procedures rely on institutional practice for recognition of credits among various European academic departments and Institutions, in line with the principles of the Lisbon Recognition Convention.

Graduation represents the culmination of the students' study period. Students need to receive documentation explaining the qualification gained, including achieved learning outcomes and the context, level, content and status of the studies that were pursued and successfully completed (Diploma Supplement).

Study Programme Compliance

Students are admitted to the undergraduate program via national state examinations and the department has a minimal say on the number and the preparation level of the incoming students. The current number of incoming undergraduate students is double relative to the number requested by the department. Only about half of these are active in the program and therefore, these active students can be managed by the current number of the department faculty.

Incoming students are informed about the program via orientation meetings and in turn by their advisors, who guide them throughout their studies. However, several students do not meet with their advisors after the first year.

Student mobility is encouraged by the department via student participation in the Erasmus program, where students may spend time at another EU institution. However, the number of students participating in the Erasmus program is low.

The Department has defined requirements for the thesis, which is optional. However, the Panel found no evidence on quality measurements and goals related to the thesis. Graduates receive the Diploma Supplement in addition to their degree.

Panel Judgement

Principle 4: Student Admission, Progression, Recognition and Certification	
Fully compliant	
Substantially compliant	x
Partially compliant	
Non-compliant	

Panel Recommendations

- The department should encourage the continuing interaction of students with their advisors throughout their studies.
- The department should encourage student participation in the Erasmus program, thus increasing student mobility.
- The department should define quality measurements and goals related to the undergraduate thesis.

Principle 5: Teaching Staff

INSTITUTIONS SHOULD ASSURE THEMSELVES OF THE QUALIFICATIONS AND COMPETENCE OF THE TEACHING STAFF. THEY SHOULD APPLY FAIR AND TRANSPARENT PROCESSES FOR THE RECRUITMENT AND DEVELOPMENT OF THE TEACHING STAFF.

The Institutions and their academic units have a major responsibility as to the standard of their teaching staff providing them with a supportive environment that promotes the advancement of their scientific work. In particular, the academic unit should:

- *set up and follow clear, transparent and fair processes for the recruitment of properly qualified staff and offer them conditions of employment that recognize 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 members (with respect to attendance requirements, performance, self-assessment, training etc.);*
- *develop policies to attract highly qualified academic staff;*

Study Programme Compliance

The teaching staff of the Department of Physics, consisting of presently 27 faculty members and 2 technical supporting persons, covers the majority of the teaching of the physics undergraduate program. A notable part of 30% of the teaching load is covered by other faculties. Additionally, six supporting teaching faculty (ΕΕΠ) contributed in 2020 to the study program. The faculty's teaching obligation follows the applicable Greek laws and regulations and does not constitute an overload. However, the department faculty and staff positions have been reduced significantly over the last years, which has increased the teaching load of the remaining faculty. The department provides a suitable infrastructure and working environment to its members and it cultivates an appropriate academic atmosphere.

There is evidence of linking between teaching and research, mainly based on the diploma thesis.

Faculty assessment in teaching is based on regular student evaluations, which are examined by MODIP, OMEA, and the department.

The recruitment of faculty is initiated by the department according to its plan for the near future. The hiring and promotion procedure follow the Greek state laws and regulations. However, the department has not evidently developed policies to attract highly qualified academic staff.

The opportunities for faculty mobility are limited. The department does not support staff mobility and does not grant absence of leave from teaching duties.

The Panel found that faculty teaching excellence is not formally recognized.

The department does not sufficiently promote the increase of externally funded collaborative research (e.g. it does not provide teaching release time to faculty who are very productive in research).

Panel Judgement

Principle 5: Teaching Staff	
Fully compliant	
Substantially compliant	x
Partially compliant	
Non-compliant	

Panel Recommendations

- The department should make efforts to increase teaching staff mobility.
- The department should develop a focused strategy to support faculty participating in externally funded collaborative research.
- The department should develop policies to attract highly qualified academic staff.
- The department should develop policies to formally recognize excellence in teaching.

Principle 6: Learning Resources and Student Support

INSTITUTIONS SHOULD HAVE ADEQUATE FUNDING TO COVER TEACHING AND LEARNING NEEDS. 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, BOARDING, CAREER AND SOCIAL POLICY SERVICES ETC.).

Institutions and their academic units must have sufficient funding and means to support learning and academic activity in general, so that they can offer to students the best possible level of studies. The above means could include facilities such as libraries, study rooms, educational and scientific equipment, information and communications services, support or 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 or international students, students with disabilities) and 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 ensures that all resources are appropriate, adequate, and accessible, and that students are informed about the services available to them.

In delivering support services the role of support and administrative staff is crucial and therefore they need to be qualified and have opportunities to develop their competences.

Study Programme Compliance

The Department of Physics provides sufficient teaching laboratories for its undergraduate students. These laboratories are overall sufficiently equipped, but some need to be upgraded with new equipment, thus enhancing student learning.

The department has maintained sufficient funding for its research activities. However, the undergraduate students' benefit from this funding is very limited, since they are involved in research only during their thesis, which is not obligatory. In addition, the external funds raised for research projects are low considering the size of the department.

The classrooms are moderately maintained. Although there are free spaces for students to stay, the department does not offer a dedicated and suitably equipped study area for its students. Students have access to the University library and some outdoors sports facilities located close to the department buildings.

The student dormitories are old and in a very poor condition and thus, they urgently need to be renovated. Some of them are occupied by unauthorized persons.

Although lectures and laboratories are held online during the COVID-19 period, normally all physics classes offered are face-to-face, with class-related material being posted at the internet. Students have access to the internet-posted material and found these useful. In general, access to persons with disabilities is provided by the department, though in some cases this access is very cumbersome.

Panel Judgement

Principle 6: Learning Resources and Student Support	
Fully compliant	
Substantially compliant	x
Partially compliant	
Non-compliant	

Panel Recommendations

- The department should enhance efforts for monitoring the projected renovation/reconstruction of the student dormitories.
- The department should develop and offer hybrid lecture classes also after the end of the pandemic.
- The department should take appropriate measures to offer suitable study rooms for its students.
- The department should encourage undergraduate research, by incorporating undergraduate students directly in research projects, thus enhancing experiential learning.
- The department should renew the general physics laboratories.

Principle 7: Information Management

INSTITUTIONS BEAR FULL RESPONSIBILITY FOR COLLECTING, ANALYSING AND USING INFORMATION, AIMED AT THE EFFICIENT MANAGEMENT OF UNDERGRADUATE PROGRAMMES OF STUDY 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 as well as to the academic community.

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

The information gathered 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 programme(s)*
- *availability of learning resources and student support*
- *career paths of graduates*

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

Study Programme Compliance

The data collection system has been well established by the institution, including the one provided by HAHE. Students are invited to complete online questionnaires on each course they take. Statistical data, according to HAHE, are available on progression completion rates. Most data collection is done online. Currently there is also an “exit” questionnaire completed by students on graduation, which will in future include contact details to facilitate alumni contact and collection of data on the graduates’ careers. However, presently, there is a lack of information on employability and career paths for its graduates. Data is collected on faculty research and teaching activities, but an assessment of teaching effectiveness of individual staff is not attempted.

The department encourages students to conduct practical training. However, there is no dedicated webpage for the practical training programme to include links of the supporting network partners, opportunities, events and other related activities.

The collected course evaluation data are analysed according to HAHE requirements. However, further analysis and consideration is missing.

Panel Judgement

Principle 7: Information Management	
Fully compliant	
Substantially compliant	x
Partially compliant	
Non-compliant	

Panel Recommendations

- The department should collect and communicate data on career paths of its graduates.
- The department should continue improving the evaluation and monitoring process in terms of organizing/automatizing the surveys analysis and improving on the trend analysis and decision procedures.
- The department should create a dedicated webpage for the practical training programme to include links of the supporting network partners, opportunities, events and other related activities.

Principle 8: Public Information

INSTITUTIONS SHOULD PUBLISH INFORMATION ABOUT THEIR TEACHING AND ACADEMIC ACTIVITIES WHICH IS CLEAR, ACCURATE, OBJECTIVE, UP-TO-DATE AND READILY ACCESSIBLE.

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

Therefore, institutions and their academic units provide information about their activities, including the programmes they offer, the intended learning outcomes, the qualifications awarded, the teaching, learning and assessment procedures used, the pass rates and the learning opportunities available to their students, as well as graduate employment information.

Study Programme Compliance

There is sufficient information about the Department of Physics on its website. Some details are in Greek, where others in English are missing. Additionally, the department website includes a video of its labs and amphitheater. The sections on the Department's Organization and the Announcements are only in Greek. This website additionally has an undergraduate Studies Guide that lists details of the department's course offerings for this year with complete descriptions of these courses in both Greek and English.

Two years ago, an alumni website was set up listing information about its recent graduates. An effort to include graduates from previous years, as well on this website has not been made, nor has an attempt been initiated to maintain regular contacts with, or systematically gather information from the department's stakeholders.

Another method, which the department disseminates information about its activities and aims locally, is by regularly inviting secondary school students from the area to the Department for "student walks". Students who visit the department can perform physics experiments, listen to lectures, etc.

Additionally, in this context, a committee has recently been set up including representatives of the department and organizations from the Patras area. The purpose of this committee is to examine how the university can more readily publicize its activities and generally improve and widen its interactions with the Patras community.

At present, half a dozen or so departmental faculty give informative talks every year at local meeting places.

Panel Judgement

Principle 8: Public Information	
Fully compliant	x
Substantially compliant	
Partially compliant	
Non-compliant	

Panel Recommendations

- The department should improve the English version of its website.
- The department should further encourage and increase its efforts for interaction with the local community.

Principle 9: On-going Monitoring and Periodic Internal Review of Programmes

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

Regular monitoring, review and revision of study programmes aim to maintain the level of educational provision and to create a supportive and effective learning environment for students.

The above comprise the evaluation of:

- the content of the programme in the light of the latest research in the given discipline, thus ensuring that the programme is up to date;*
- the changing needs of society;*
- the students' workload, progression and completion;*
- the effectiveness of the procedures for the assessment of students;*
- the students' expectations, needs and satisfaction in relation to the programme;*
- the learning environment, support services and their fitness for purpose for the programme*

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. Revised programme specifications are published.

Study Programme Compliance

In the context of a regular internal review of its program, the department collects surveys from students for every course they attend electronically. Additionally, it collects anonymous surveys from graduating students in order to gain insights into their experience at the department, their feelings about the various courses they took, and the way they were taught. These latter surveys have to date not been carefully analyzed by the department. Since 2008, the department systematically collects student surveys of all its courses taught each semester. These surveys are performed electronically as of 2017, with fewer, but perhaps more objective responses than when they were done manually. These are reviewed by the department and the MODIP.

Although the department feels that they were in full compliance with the 2013 external evaluation recommendations, the Panel found that some of these recommendations were not met (e.g. strategic plan has not been formed yet).

Panel Judgement

Principle 9: On-going Monitoring and Periodic Internal Review of Programmes	
Fully compliant	
Substantially compliant	x
Partially compliant	
Non-compliant	

Panel Recommendations

- The department should implement a strategic plan taking into account the ongoing and periodic internal reviews of the program.
- The department should analyze the results from the graduates' questionnaires and take them into account for the next program update.

Principle 10: Regular External Evaluation of Undergraduate Programmes

PROGRAMMES SHOULD REGULARLY UNDERGO EVALUATION BY COMMITTEES 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 programme accreditation process which is realised as an external evaluation procedure, and implemented by a committee of independent experts. HAHE grants accreditation of programmes, with a specific term of validity, following to which revision is required. The accreditation of the quality of the programmes acts as a means of verification of the compliance of the programme with the template's requirements, and as a catalyst for improvement, while opening new perspectives towards the international standing of the awarded degrees.

Both academic units and institutions participate in the regular external quality assurance process, while respecting the requirements of the legislative framework in which they operate.

The quality assurance, in this case the accreditation, is an on-going process that does not end with the external feedback, or report or its follow-up process within the Institution. Therefore, Institutions and their academic units ensure that the progress made since the last external quality assurance activity is taken into consideration when preparing for the next one.

Study Programme Compliance

The department underwent an external evaluation of its undergraduate and graduate programs in December 2013 by a three-member committee, operating under the auspices of the HQA. The HAHE did not initiate a further evaluation or accreditation of the department's programs during the ensuing seven-year period prior to setting up the present panel this Fall. The 2013 HQA evaluation was generally positive. The department revised the undergraduate curriculum in accordance with the recommendation of the external review and established the Student Advisor. The Panel found that the department is open to suggestions for program improvements and modifications, where appropriate, as can be seen from the OMEA's report. However, the Panel found that there was no comprehensive update of the undergraduate program and the department has not refurbished/renewed laboratory equipment used in General Physics labs, as was recommended.

Panel Judgement

Principle 10: Regular External Evaluation of Undergraduate Programmes	
Fully compliant	
Substantially compliant	x
Partially compliant	
Non-compliant	

Panel Recommendations

- The department should continue to have its undergraduate program reviewed by external panels every four years.
- The department should implement all the recommendations of the external review panels.

PART C: CONCLUSIONS

I. Features of Good Practice

- The physics undergraduate program is well-established and of high quality.
- The department's infrastructure is satisfactory, and the teaching personnel are of high quality.
- The department is recognized nationally and internationally in terms of research and education.
- Physics undergraduate students have the option to participate in internships within the Greek public and private sectors, leading to successful careers.
- The relationships between students and faculty are positive.

II. Areas of Weakness

- The achievements of the department in terms of research and grants acquisitions are low.
- The physics undergraduate curriculum is heavy in the area of General Physics.
- There is no sufficient evidence that the physics undergraduate program is student oriented.
- The relationship between the alumni and the department is weak.
- The department has low percentage of women faculty members.
- The link between teaching and research is weak.

III. Recommendations for Follow-up Actions

- The department should develop policies to promote research and grants acquisition.
- The department should follow the recommendations of the Panel for reducing the course load in the first two years.
- The department need to formally implement recitations sections for the majority of their undergraduate courses.
- The department should strengthen its links with its alumni.
- The department should substantially increase the number of female faculty members.
- The department should enhance the linking of teaching and research (e.g. making the optional thesis mandatory).

IV. Summary & Overall Assessment

The Principles where full compliance has been achieved are: Principles 1 and 8.

The Principles where substantial compliance has been achieved are: Principles 2, 3, 4, 5, 6, 7, 9, and 10.

The Principles where partial compliance has been achieved are: None

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

1. **Prof. Nikolaos Dimakis (Chair),**
University of Texas Rio Grande Valley, USA
2. **Prof. Dr. Anthimos Georgiadis,**
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3. **Prof. Emeritus Harry Mavromatis,**
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4. **Prof. Georgios Palasantzas,**
University of Groningen, The Netherlands