



ΕΛΛΗΝΙΚΗ ΔΗΜΟΚΡΑΤΙΑ
Α Δ Ι Π
ΑΡΧΗ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ
ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΣΤΗΝ ΑΝΩΤΑΤΗ ΕΚΠΑΙΔΕΥΣΗ

HELLENIC REPUBLIC
HQA
HELLENIC QUALITY ASSURANCE
AND ACCREDITATION AGENCY

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Αρ. πρωτ.: 13063

ΑΠΟΦΑΣΗ ΠΙΣΤΟΠΟΙΗΣΗΣ

Το Συμβούλιο της Αρχής Διασφάλισης και Πιστοποίησης της Ποιότητας στην Ανώτατη Εκπαίδευση
(ΑΔΙΠ)

Έχοντας υπόψη:

1. τις διατάξεις των άρθρων 66, 71-73 του ν. 4009/11
2. την ΥΑ 1553/2014 (ΦΕΚ 324/Υ.Ο.Δ.Δ./6-6-2014) για τη συγκρότηση του Συμβουλίου της Ανεξάρτητης Διοικητικής Αρχής, με την επωνυμία «Αρχή Διασφάλισης και Πιστοποίησης της Ποιότητας στην Ανώτατη Εκπαίδευση» Α.Δι.Π., όπως τροποποιήθηκε και ισχύει
3. την ΥΑ 19768/Ζ1 ΦΕΚ 72/Υ.Ο.Δ.Δ./15-02-2019, με την οποία ορίζεται ως Πρόεδρος της Α.Δι.Π., ο καθηγητής Παντελής Κυπριανός
4. την 96/14-11-2019 συνεδρίαση του Συμβουλίου, θέμα 4.2 «Έγκριση Έκθεσης Πιστοποίησης ΠΠΣ Φυσικής του Πανεπιστημίου Κρήτης – Χορήγηση Πιστοποίησης»

ΠΙΣΤΟΠΟΙΕΙ

ότι το Πρόγραμμα Προπτυχιακών Σπουδών Φυσικής του Πανεπιστημίου Κρήτης συμμορφώνεται πλήρως με τις αρχές του Προτύπου Ποιότητας ΠΠΣ της ΑΔΙΠ και τις Αρχές Διασφάλισης Ποιότητας του Ευρωπαϊκού Χώρου Ανώτατης Εκπαίδευσης (ESG 2015).

Η διάρκεια ισχύος της πιστοποίησης ορίζεται για τέσσερα έτη, από 14-11-2019 έως 13-11-2023.

Για το Συμβούλιο της ΑΔΙΠ

Ο Πρόεδρος



ΑΡΙΣΤΕΙΔΟΥ 1 & ΕΥΡΙΠΙΔΟΥ 2, 10559 ΑΘΗΝΑ
Τηλ. +30 210 9220944, Φαξ +30 210 9220143

Ηλ. Ταχ. adipsecretariat@adip.gr, Ιστότοπος: <http://www.adip.gr>

1, ARISTIDOU ST & 2, EVRIPIDOU ST., 10559 ATHENS, GREECE
Tel. +30 210 9220944, Fax +30 210 9220143

Email: adipsecretariat@adip.gr, Website: <http://www.adip.gr>



Επιχειρησιακό Πρόγραμμα
Ανάπτυξη Ανθρώπινου Δυναμικού,
Εκπαίδευση και Διά Βίου Μάθηση

Με τη συγχρηματοδότηση της Ελλάδας και της Ευρωπαϊκής Ένωσης





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HELLENIC REPUBLIC

H Q A

HELLENIC QUALITY ASSURANCE
AND ACCREDITATION AGENCY

Accreditation Report for the Undergraduate Study Programme of:

Physics

Institution: University of Crete

Date: 13 October 2019

ΑΡΙΣΤΕΙΔΟΥ 1 & ΕΥΡΥΠΙΔΟΥ, 105 59 ΑΘΗΝΑ

Τηλ.: +30 210 9220944, FAX: +30 210 9220143

Ηλ. Ταχ.: adipsecretariat@hqa.gr Ιστότοπος: <http://www.hqa.gr>

1, ARISTIDOU ST., 105 59 ATHENS, GREECE

Tel.: +30 210 9220944, Fax: +30 210 9220143

Email: adipsecretariat@hqa.gr Website: www.hqa.gr



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 HQA to undertake the review of the Undergraduate Study Programme of Physics of the University of Crete for the purposes of granting accreditation

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PART A: BACKGROUND AND CONTEXT OF THE REVIEW

I. The Accreditation Panel

The Panel responsible for the Accreditation Review of the Undergraduate Study Programme of Physics of the University comprised the following three (3) members, drawn from the HQA Register, in accordance with the Law 4009/2011:

1. Prof. Dr. Anthimos Georgiadis (Chair),
Leuphana University of Lueneburg

2. Prof. Nikolaos Dimakis,
University of Texas Rio Grande Valley

3. Prof. Emeritus Harry Mavromatis,
American University of Beirut

II. Review Procedure and Documentation

The External Accreditation Committee visited the Department of Physics (DoP) of the University of Crete (UoC) in Heraklion during the period of October 08 to 10, 2019.

The Panel arrived at Heraklion October 08.10.19 late in the evening and met in the hotel to prepare for the next day's work. The visit at the department building, part of the University campus at Voutes – Heraklion, took place on Wednesday 09.10.19. The Panel first met with the Deputy Rector of Academic Affairs (Prof. Ioannis Karakassis) and the Department Head (Prof. Alexandros Georgakilas). Later on, the members of the Quality Assurance Unit (ΜΟΔΙΠ) and the members of the Department's Evaluation Unit (ΟΜΕΑ) participated in the second longest part of the meeting. After the introductory presentation by the Vice Rector of UoC, the meeting continued with a presentation from the department's head and discussions with the members of the Quality Assurance Unit and the members of the Department's Evaluation Unit. These presentations highlighted the Department's undergraduate and graduate programs, the research activities of the Department's Divisions (Τομείς) and those of each separate Laboratory (Εργαστήριο) within each Division as well as the very close collaboration (ecosystem) with the ITE (Ιδρυμα Τεχνολογίας και Έρευνας). During these presentations, the Committee requested clarifications and additional information, to all of which the Department responded directly.

During the same day, the Committee met with teaching staff (primarily faculty members of the Department and Emeritus Professor Eleftherios Economou and listened to their points of view and concerns about the Department's teaching policy, teaching load, performance of students, and the procedures of the internal evaluation. Major concerns included the continuously increasing number of incoming new students, as well as the students not graduating even after 6 years of studies (n+2). These were considered obstacles to quality improvement. The members of the Department also raised the issue of the lack of support from sufficient technical staff, especially in laboratory or project-based activities.

A meeting with 19 students from all 4 years of the undergraduate program followed. The discussion was very informative for the committee in their effort to better comprehend the studies program. The students were enthusiastic as regards their studies and pointed out that more optional courses would be useful. They were also happy with the facilities and access offered to the library and laboratories in their studies.

After a short lunch break, the Panel met with the graduates of the Department currently employed in industry, the public sector, and research. This encounter gave a very good impression to the committee about the quality of the program, given their graduates' subsequent success.

The first day's visit ended after a meeting with employers (mainly graduates from the Department) and social partners. The Panel found there was an overall satisfaction with the level of competence of the graduates working in their institutions or companies. Moreover, the social partners expressed a very strong commitment to the department.

The second day was devoted to visiting classrooms, lecture halls, computer rooms, and research and teaching laboratories and included a series of demonstrations of their capabilities.

After a debriefing, a second meeting with the OMEA and MODIP took place. The discussions helped to clarify several points and findings. A closure meeting with the Vice-rector/President of the MODIP and the heads of the Department and OMEA then took place, after which the panel visited the associated laboratories of ITE. Staff members of the Department presented their research laboratories and described their scientific work.

In its deliberations, the Committee took into consideration the following documents provided by the Department:

The Department's accreditation proposal

The quality control policy

The program's strategic objectives

Studies guide

Study rules of application

Course outlines

Data on personnel, finances on research and infrastructure, scientific output, etc.

Additional supplementary information

Electronic copies of all presentations

The committee also drew additional information available on the Department's webpage. The Committee 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 in the Department's main building. The faculty, students, and staff were extremely helpful, forthcoming and cooperative, and the overwhelming majority participated with enthusiasm in the evaluation process. The documents provided and the presentations were informative, of high quality and detailed.

The Committee would like to express its appreciation to Vice Rector Prof. Ioannis Karakassis, Department Head Prof. Alexandros Georgakilas, Prof. Vassilios Charmandaris president of

OMEA, Vice Rector Spiros Anastasiadis member of MODIP, Professors T-P. Rakitzis, G. Tsironis, E. Economou and all members of the MODIP for their efforts to facilitate the work of the Committee. The committee is also thankful to all the individuals who participated in the discussions and presentations of the Department and the ITE laboratories.

The input and organization of the HQA is greatly appreciated.

III. Study Programme Profile

The Department, founded in 1978, is a part of the School of Sciences and Engineering of the UoC and since then has provided curricula in Physics on a four-year basis. This year 170 students entered the undergraduate program to follow an 8-semester curriculum, which corresponds to 240 ECTS. Furthermore, the Department offers graduate studies programs in “Advanced Physics” (2 semesters, 60 ECTS) and in “Photonics and Nanoelectronics” (3 semesters, 120 ECTS).

The Department has 19 faculty members, 5 Teaching staff (Ε.ΔΙ.Π.: Εργαστηριακό Διδακτικό Προσωπικό) + 3 Postdoctoral instructors on contract + Voluntary instructors (Emeritus, Retired, Visiting) mainly in graduate courses. Additionally, they have 2 Technical staff (Ε.Τ.Ε.Π.: Ειδικό Τεχνικό Εργαστηριακό Προσωπικό), 5 Administrative staff and 1 + 2 (on contract) Computers & Networks.

The Physics Dept. has five sections: Theoretical High Energy Physics, Astrophysics and Space Physics, Atomic, Molecular, and Optical Physics, Condensed Matter Physics, and Applied Physics.

The general structure of the curriculum consists of three stages:

Introductory stage: (3 semesters) introductory courses in Physics and Mathematics.

Fundamental stage: (3 semesters), Basic courses having as a scope to offer a deeper understanding of subjects in physics. The students broaden their laboratory experiences here.

Advanced stage: (2 semesters), the student applies the basic knowledge acquired in various fields of physics and technology, and comes into further contact with the research laboratories.

The Department offers students the possibility of a more in depth knowledge in various fields both applied, such as Microelectronics, Optoelectronics and Lasers, as well as more theoretical such as Fundamental Physics, Astrophysics or Condensed Matter Physics also due to their participation in ongoing research projects or student-dedicated projects.

The graduates have different perspectives, with the selection of the graduate courses followed after, to become a modern engineer or applied scientist in fields such as telecommunications, electronics, optoelectronics, computational science, materials science, mild energy sources, the environment, and medical technology. The physics graduates may further easily turn, with proper curriculum choices, into some modern areas of chemistry, chemical technology, and biology. For students interested in research, the Department in collaboration with ITE offers opportunities to pursue graduate studies, and a research career at a university or research centre.

The Department collaborates with all other departments of the school and further related schools (medicine) and the ITE Foundation forming an effective ecosystem for education and research.

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 Crete (UoC) already established a quality assurance policy and the corresponding mechanism (MODIP), which follows the standards of HQA. The quality assurance policy of the Physics Department is fully in line with the University's quality and assurance policy. Moreover, the Department has published its quality policy statements on its home page, presenting its immediate goals, the corresponding steps and time for their fulfilment. The Department's quality assurance policy focuses on the achievement of their dedicated objectives related to study programmes. Furthermore, it provides the review and update of the existing courses. The internal quality procedural steps ensures the update of the courses on an annual basis. The department, using the MODIPs system and the institutional homepage, publishes its

goals and monitors achievements. However, the Department needs to organize/automate the analysis of the student's surveys in order to improve on the trend analysis and procedures for decision.

The policy of the Department supports, in a remarkable way, considering the significant financial constraints, the study programme, the services and the infrastructure, as well as the allocation of necessary resources for the successful operation. In this respect, it benefits from the external research projects overheads, the collaboration with ITE and the participation of the retired professors. The Department leadership, as well as individual staff members, have taken on strongly and very successfully their responsibilities in the internal quality assurance system (IQAS) to achieve the continuous improvement of teaching and learning, research and innovation. The study programme emphasises the integration of the students and staff in cooperative research projects, student research projects and early participation of the undergraduates to ongoing research. Moreover, the Department follows very successfully current developments in physics and technology through its leading participation in European and worldwide research activities. The Department is currently the highest ranked physics Department in Greece as per the «Times Higher Education».

Panel judgement

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

Panel Recommendations

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 is research-oriented, providing high quality education. Its annual external funding is about 2 M Euros per year.

The Department of Physics offers an undergraduate degree (Ptyhion, equivalent to Bachelor of Science-BS) in Physics: The degree curriculum is well defined in the program of study (odigos spoudon), and offers mandatory Physics courses and elective courses in Physics and other STEM (Science, Technology, Engineering and Mathematics) areas. Ptyhion requires 240 European Credit Transfer and Accumulation System (ECTS) credits to be completed in 8 semesters (4 years) and complies with Greek and EU standards. Students have the option of participating in curriculum changes via their representatives in the departmental and University committees. However, currently students and other stakeholders' participation in curriculum development is limited. The Department of Physics receives feedback for its graduates from external stakeholders from the labour market. The committee found evidence that students lack innovation and entrepreneur skills.

Students are advised by faculty members throughout their duration of studies, thus ensuring smooth progress. Students have work experience options in the industry, the Greek public sector, and going aboard to EU institutions of higher education via participation in the Erasmus

program. The degree curriculum offers experiential learning activities via research mentoring, which includes a Thesis option, as well as individual research with Department faculty members. Curriculum revisions are initiated by the departmental committee (OMEA) and must be approved by the appropriate University level committee (MODIP) and the University general assembly in order become final.

Panel judgement

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

Panel Recommendations

- 1) The Department of Physics must encourage students and external stakeholders to participate more actively in curriculum development.
- 2) Innovation and entrepreneurship skills should be strengthened.

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 Department of Physics undergraduate degree offers several elective courses in Physics and other STEM (Science, Technology, Engineering and Mathematics) areas, thus enhancing students' flexibilities in their undergraduate studies. Specifically, physics undergraduate students must take 14 elective courses. However, flexibility is limited in the case of the English I and II courses. Undergraduate classes are taught face-to-face and hybrid (i.e., face-to-face combined with online delivery), the latter has been implemented in some advanced undergraduate courses. However, the committee was unable to find out if new pedagogical methods have been incorporated (e.g. reverse classroom, peer instruction, etc.). Teaching

instruction is evaluated by students via surveys, which in most cases are distributed in class. Additionally, web based surveys are available but with low student participation. Every student has an advisor, who monitors their coursework and progress throughout their studies. Moreover, the committee found that students felt very satisfied with the collegial environment and professionalism of the Department faculty. In some cases, multiple faculty evaluates student coursework.

Course assessment criteria are included in the syllabi. However, when multiple examinations take place, individual weights of these assignments were missing in 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. The Department 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

- 1) The Department of Physics is advised to 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 syllabus.
- 2) The Department should enhance the flexibility in fulfilling the foreign language requirements.

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 preparation level of the incoming freshmen. The current undergraduate numbers are too high to be well served by the existing infrastructure and the low number of teaching staff (only 19 professors).

Incoming freshmen are informed about the program via orientation meetings and in turn by their advisors, who guide them throughout their studies. Although the program of study contains courses that are typically found in other Universities elsewhere, certain advanced courses may not always correspond to similar courses taught within the EU.

The Department strongly supports, motivates and encourages students to perform practical training in research facilities within the department, in the industry, the public sector and at research centers such as ITE.

Student mobility is encouraged by the Department via the student participation in the Erasmus program, where students may spend time at another EU institution and by student internships in the Greek private and public sector.

The Department has defined an adequate set of quality requirements for the implementation of the thesis. Graduates receive the Diploma Supplement in addition to their degree.

Panel judgement

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

Panel Recommendations

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

Faculty recruitment is initiated by the Department of Physics, by identifying Greek-speaking faculty in Greece and abroad, which are involved in cutting-edge research and potentially a good fit to the department. In turn, the hiring and promotion procedure follow the Greek state laws and regulations. On April 8, 2019, the Department of Physics developed a road map, where it projects the faculty and staff needs for the next four years (2019-2023). However, this document shows that the department faculty and staff positions requests are less than the number of faculty and staff that already left the Department and those expected to leave by 2023 due to retirement, while the number of students is continuously increasing. The Department offers opportunities for faculty mobility by promotion to higher faculty ranks. Moreover, the Department encourages strong collaborations with ITE, which offers state-of-the-art experimental facilities. Furthermore, most faculty are also involved in collaborative research with other Greek, EU, and other institutions.

Faculty teaching workload follows existing applicable Greek laws and regulations. The Department provides teaching release time for new faculty to set up their laboratory and initiate research. Moreover, teaching release time is also provided to faculty due to increased research output.

Department faculty and staff are available onsite for their students and follow an open-door policy (i.e. no appointment is required), as evidenced by the student evaluations. There is strong evidence of linking between teaching and research. Faculty assessment in teaching is based on regular student evaluations, which are examined by MODIP, OMEA, and the Department. However, funds received by the department faculty due to collaborative research at ITE are not recorded as Department assets.

Panel judgement

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

Panel Recommendations

1) The Department of Physics should reevaluate the number of faculty required for near future and consider hiring also non-Greek speaking faculty.

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

Although funding has decreased in the last years, the Department of Physics has maintained sufficient funding to support learning and academic activities, as well as student involvement in research. This was achieved using part of the overheads from externally funded grants. Specifically, the Department has state-of the art research and teaching laboratories and computational facilities, the latter include a mainframe server and a computer room with several workstations. All of these facilities are available to students. The department teaching laboratories have been recently updated with new equipment, thus enhancing student learning. The building common areas, classrooms, and laboratories are well maintained and classrooms seating has been updated. The Department offers a study area and students can connect to the internet via Wi-Fi access. Students have access to the University library and the sports hall. Although the Department does not offer its own student counseling services, these services are available at the University. The University currently lacks student dormitory facilities but it is planned to build an appropriate number in the near future.

The current implementation of hybrid classes in the Department of Physics is very effective for students that are currently employed and still must attend their classes. When Erasmus students are present in a class, this class is either taught in English or taught both in Greek and English.

Panel judgement

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

Panel Recommendations

The Department should monitor the projected construction of the student dormitories.

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

UoC and accordingly the Physics Department, have systems in place, through which they collect information about students, faculty and staff, infrastructure, organization and quality of teaching, as well as availability and offering of services.

It records all courses and rules for the students, while offering the capability for the extraction of numerous and diverse statistical analyses, performance indicators, the profile of the student population, the percentages of on-time graduation or graduation delays by 1, 2 or more years, and dropouts.

Each semester, students fill out questionnaires, hard copy and electronically.

MODIP receives the Annual Internal Report, which highlights the most important elements of the operation of the Department during the previous academic year. These data are recorded and codified by OMEA. However, the analysis of the surveys is not automated.

Panel judgement

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

Panel Recommendations

The Department should continue improving the evaluation and monitoring process in terms of organizing/automatizing the analysis of surveys and improving on the trend analysis and procedures for decision.

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

Appropriately, the Department publicizes its activities through its website that includes an English section, the Alumni website, Facebook, and social media. The departmental website provides details about the department, its course offerings, and ongoing departmental research activities, scheduled seminars and special events, local and international conferences, etc.

Another method, by which the Department disseminates information about its activities and aims locally, is by regularly inviting secondary school students from around Crete to the Department on assigned Saturdays. In situ, the students can perform physics experiments while, at the same time, through their teachers, their respective institutions are updated about the latest happenings and activities at the Department. This particular activity of the Department is in keeping with one of the recommendations of the November 2008 External Evaluation Committee's recommendation that the Department establish "a better link with local schools".

However, public dissemination of the Department's achievements is limited.

Panel judgement

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

Panel Recommendations

The Department should improve the presentation of its achievements.

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 their programme, the Department collects surveys from students for every course they attend. Additionally, it collects surveys from graduating students in order to gain insights into their experience at the Department, their feelings about the various courses they took, the way they were taught, etc. To gain an even broader input base, the Department additionally obtains feedback from their alumni. Since 2012, it systematically obtains surveys of all the courses taught each semester and the faculty who taught these courses. The Department regularly reassigns teaching assignments to required courses in order to allow its students a greater exposure to the various faculty members in the Department. The Department maintains links with some employers of its graduates to find out how the Department has to develop with the rapidly changing environment.

Panel judgement

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

Panel Recommendations

Principle 10: Regular External Evaluation of Undergraduate Programmes

PROGRAMMES SHOULD REGULARLY UNDERGO EVALUATION BY COMMITTEES OF EXTERNAL EXPERTS SET BY HQA, AIMING AT ACCREDITATION. THE TERM OF VALIDITY OF THE ACCREDITATION IS DETERMINED BY HQA.

HQA is responsible for administrating the programme accreditation process which is realised as an external evaluation procedure, and implemented by a committee of independent experts. HQA 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 in November 2008 by a five-member team operating under the auspices of the HQA. The HQA did not initiate a further evaluation or accreditation of the Department's program during the ensuing eleven-year period prior to setting up the present panel this fall. The 2008 HQA evaluation was generally very positive (including the observation that "The Department has clearly developed to a level of excellence in research"). Our Panel realized that the Department had put considerable effort to reflect on, and fully address the numerous standardized concerns of the HQA. Thus, it was able to address the Panel's requests for general information as well as more specialized details about its goals and activities. The Panel senses that the Department is open to suggestions for improvements and program modifications, where appropriate. The members of the Department appeared to be very much aware of the importance of the present external accreditation review and the significance of its findings.

Panel judgement

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

Panel Recommendations

PART C: CONCLUSIONS

I. Features of Good Practice

1. Department follows very successfully current developments in physics and technology through its leading participation in European and worldwide research activities.
2. The Department has high reputation nationally and internationally in terms of research and education.
3. A significant number of undergraduate students participate in hands-on projects and research leading in successful carriers.
4. The Department of Physics together with the Biology Department hold an elegant and clean building.

II. Areas of Weakness

1. The achievements of the Department in terms of research and grants acquisition need more systematic and detailed presentation including the activities of staff taken place in research canthers outside the department's laboratories.
2. The recruitment of faculty staff needs more effort in order to replace vacancies and to ensure future development.
3. The Department has not addressed the percentage of women faculty members yet.

III. Recommendations for Follow-up Actions

1. The Department should continue improving the evaluation and monitoring process in terms of organizing/automatizing the analysis of surveys and improving on the trend analysis and procedures for decision.
2. The Department should improve the support of innovation and entrepreneurship.
3. The Department should undertake more effort to acquire appropriate teaching halls for the increased number of students.
4. The Department should substantially increase the number of female faculty members.

IV. Summary & Overall Assessment

The Principles where full compliance has been achieved are:

Principles 1, 2, 4, 5, 6, 8, 9 and 10.

The Principles where substantial compliance has been achieved are:

Principles 3 and 7.

The Principles where partial compliance has been achieved are:

None

The Principles where failure of compliance was identified are:

None

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

**The members of the Accreditation Panel for the Undergraduate Programme
Physics of the University of Crete**

Name and Surname

Signature

- **Prof. Anthimos Georgiadis (Chair)**, Leuphana
Universität Lüneburg, Lüneburg, Germany
- **Prof. Nikolaos Dimakis**, University of Texas Rio Grande
Valley, Edinburg, Texas, USA
- **Prof. Emeritus Harry Mavromatis**, American University
of Beirut, Beirut, Lebanon