



ΕΛΛΗΝΙΚΗ ΔΗΜΟΚΡΑΤΙΑ  
ΑΔΙΠ

ΑΡΧΗ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ  
ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΣΤΗΝ ΑΝΩΤΑΤΗ ΕΚΠΑΙΔΕΥΣΗ

HELLENIC REPUBLIC

HQA

HELLENIC QUALITY ASSURANCE  
AND ACCREDITATION AGENCY

# Accreditation Report for the Undergraduate Study Programme of:

Computer Science  
Institution: University of Crete  
Date: September 2019

ΑΡΙΣΤΕΙΔΟΥ 1 & ΕΥΡΙΠΙΔΟΥ, 105 59 ΑΘΗΝΑ  
Τηλ.: +30 210 9220944, FAX: +30 210 9220143  
Ηλ. Ταχ.: [adipsecretariat@hqa.gr](mailto: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](mailto:adipsecretariat@hqa.gr) Website: [www.hqa.gr](http://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 **Computer Science** 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 the **Computer Science** of the **University of Crete** comprised the following four (4) members, drawn from the HQA Register, in accordance with the Law 4009/2011:

1. **Prof. Sotirios Skevoulis (Chair)**  
Pace University, New York, USA
2. **Dr. Haralambos Hatzakis**  
Biotronics3D Ltd, London, UK
3. **Prof. Christos Politis**  
Kingston University, London, UK
4. **Prof. Panayiotis Zaphiris**  
Cyprus University of Technology, Limassol, Cyprus

## **II. Review Procedure and Documentation**

Hellenic Quality Assurance and Accreditation Agency (HQA) put together an external and independent panel of experts to conduct an assessment of the compliance of the study programme of Computer Science of the University of Crete (UoC) in accordance to the HQA Quality Assurance requirements.

The assessment was conducted on-site through document reviews, interviews and observation of activities. The Accreditation Panel (AP) used the following guidelines:

- The method used was based on sampling of the Department's activities.
- The assessment was based on the evidence provided in written or verbal format.
- The Information provided by the Institution and the Department was considered accurate.

The assessment started by reviewing the documentation submitted by the Computer Science Department (CSD) prior to the on-site visit. It continued with on-site interviews and observation of premises aiming to evaluate the fulfilment of the HQA requirements of the relevant Quality Standard of the Study Programme and comment on its compliance, effectiveness and applicability for the scope of the requirements.

On Monday the 23rd of September 2019 at 13:00 the AP attended a meeting with the President of HQA prof. Pantelis Kyprianos, and the General Manager Dr. Christina Besta, explained to the AP the Accreditation Procedure and the role and tasks of the AP members. In addition, they reviewed and explained each of the ten principles that each programme under accreditation should comply with. After this meeting, the AP members met to organise their meetings, coordinate their work and get prepared for the accreditation event. Later on the same day, the AP flew to Heraklion, Crete.

The first visit to the Department of Computer Science, at the University of Crete took place on Tuesday 24 September 2019 at 09:30. The visit lasted until approximately 17:00. At the welcome meeting, the AP met the Vice-Rector and President of the Quality Assurance Unit (MODIP), Professor Ioannis Karakassis and Head of the Department of Computer Science, Professor Angelos Bilas. Initially, Professor Karakassis welcomed the AP on behalf of UoC and gave a broad overview of the history and current developments of the University. He continued by informing the AP about the Quality Assurance procedures of the institution and highlighted the relevant good Quality Assurance practices which are present in the Department of Computer Science.

Professor Angelos Bilas, in his Head of Department capacity, gave a presentation of the history of the Department and its continued growth, highlighting some of the achievements which have given it a strong reputation both nationally and internationally. Subsequently, he offered an overview of the Computer Science study programme, its aims and objectives, staffing and student numbers, along with information regarding the programme progression and completion statistics, and the preparation of the students for the labour market.

Later on Tuesday 24 September 2019 and through the following day Wednesday 25 September 2019, the AP had meetings with the following groups: MODIP representatives prof Karakassis, Deputy Rector for Academic Affairs and president of MODIP, Spiros Anastasiadis, Professor

(Dept. of Chemistry, MODIP representative), Andreas Fountoulakis, Professor, (Dept. of PreSchool Education, MODIP representative), Antonia Konstanteli, (Secretariat, support staff), Eleni Karkanaki (MODIP staff), Kallia Varoucha (MODIP staff); and the Evaluation Group (OMEA) representatives Manolis Katevenis, Professor (OMEA representative), Evangelos Markatos, Professor, (OMEA representative), Yannis Tzitzikas, Professor, (OMEA representative), and Panagiota Fatourou, Associate Professor, (OMEA representative), Angelos Bilas Professor (CSD Chair and OMEA representative), and Ms. Kalaitzaki, administrator, (OMEA representative). The MODIP Quality Assurance team explained the Department's overall evaluation processes and the way in which it is supported and coordinated by the OMEA (Internal Evaluation Committee of Department), and answered a series of questions from the AP, providing supplementary information on a number of topics. Immediately after the above meeting, the AP met members of the teaching staff.

As part of the meeting with this group, the AP had the opportunity to discuss a number of issues, including staff professional development and career advancement, teaching and research workloads, staff mobility, and funding opportunities. Additionally, there was a detailed discussion around the principles of student-centred teaching and learning, the way in which academic staff link teaching and research, and the structure and specialisations of the study programme. After the end of the meeting with the MODIP/OMEA representatives the AP met with a group of approximately twenty (20) Undergraduate students. As part of this particularly important meeting, the AP asked students about their satisfaction with the Department and the programme of study, their involvement in feedback and evaluation processes and their perception of their study programme from an external perspective, and the opportunities afforded to them to actively participating in research activities. Overall, the students offered a very positive opinion about their relationship with the members of the teaching staff which they consider an integral part of their overall academic success. They also expressed their general satisfaction with their overall learning and teaching experience.

Later in the afternoon of the first day of visit, the AP had a meeting with graduates of the programme. This group offered a very positive overview of their past experience and confirmed that their successful professional development and career opportunities benefited greatly from their time in the Department and the study of the programme.

Employers and Social Partners were the next group that the AP met before closing the first day of the on-site visit. Specifically, the AP met with Nikolaos Raptakis from the Region of Crete, Konstantinos Mochianakis, Municipality of Heraklion, Michael Katharakis, Heraklion Chamber of Commerce and Industry, Georgios Panselinas, School Advisor, Ministry of Education, Artemis Saitakis, STEP-C, Dr. Ioannis Markopoulos, Forthnet, Vasilis Spitadakis, Neurocom, Dimitris Tsigos Vtrip, Starttech, Michael Flouris OnApp, Antonis Chariton, Enartia and Margherita Antona, FORTH-ICS. The group was positive about the Department and its students, highlighting the strong employability skills of the students.

During the second day of the visit (Wednesday, 25 September 2019) the AP had the opportunity to visit the main facilities of CSD, that are available to the Department of Computer Science and are used to support its students. The visit was organised by the Head of Department Professor prof. Angelos Bilas and started with a visit to classrooms, lecture halls, library, computer rooms, study room to continue with a visit to a number of CSD labs (digital design, networks/signals/voice, teleconference facilities and UCNET datacenter).

The final meeting with OMEA and MODIP representatives took place on Wednesday 25 September 2019. The AP met with representatives from both the MODIP and the OMEA. During this meeting the AP provided some overall feedback, outlining the overarching findings of the accreditation visit.

Overall, the Accreditation Committee was impressed with the hospitality of the faculty and students' willingness to engage in the accreditation process, and in general the vibrant environment and pride exhibited by both faculty and students. The AP is grateful to the entire team for the very helpful and informative facilities tour, and the overall positive atmosphere in which the visit was conducted. Everyone who interacted with the AP was found to be very collaborative and supportive. The AP was provided with further information every time it was requested.

### **III. Study Programme Profile**

The Department of CS is a pioneer in computer science education in Greece, and one of the two first Computer Sc./Eng departments. CSD was founded in 1983 and has since become one of the most prominent computer science departments in Greece. Its main academic provision focuses on a comprehensive four-year Bachelor's degree programme which spans a wide spectrum of theoretical and applied computing subjects. The CS Department fosters and maintains strong relationships with the industry and the Institute of Computer Science. These relationships shape the graduate level attributes which ultimately make Informatics graduates highly sought after, both by employers and industry, but also prominent international universities offering postgraduate opportunities.

The department has attracted a number of faculty from leading universities worldwide (Berkeley, Rochester, Toronto, Princeton, Columbia USC, Harvard etc.) Graduates from CSD either hold faculty position at prominent universities in the USA and the UK (Stanford, Rice, Columbia, Rutgers, etc.) or play key roles in leading the industry (IBM, Apple, Microsoft, Facebook, etc.)



## 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.*

*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.*

*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 Department of Computer Science of the UoC implements a Quality Assurance Policy which, in principle, is in line with the Institution's Quality Policy and Quality Manual, aiming primarily at the continuous improvement of the programme. Its Quality Policy focuses on its educational, scientific, research and administrative work, and is accessible via its website to all stakeholders. Through the Quality Policy statement, the Department is committed to the implementation of a Quality System aiming at:

- the compliance with internationally accepted Quality Standards for Academia,

- the alignment with modern trends for computer science, informatics and telecommunications,
- the applied teaching with emphasis on lab work, promotion of inquiring and productive way of thinking, and understanding of the basic principles for training new scientists and engineers.
- the right mix of depth and width of knowledge in the relevant field
- the further specialisation in cutting edge technologies, with participation in research activities and collaboration with the Foundation for Research and Technology – Hellas (FORTH).

Furthermore the Department's Quality Policy dictates an interactive strategy of ongoing improvement based on 4 steps: Planning, Implementation, Evaluation and Optimisation.

The Department benefits for the well-trained members of the Institution's Quality Assurance Unit (QAU) to create, implement and manage its Quality Management System. AP has met 4 members of this unit assisting the process.

The Department has set objectives and associated measurable Key Performance Indicators (KPI) which are compatible with the objectives of the Programme and the University strategic goals. Those KPIs were established recently, and as such the Department will start monitoring them in the future. The Institution's QAU presented on request a document for the monitoring of the Institution's KPIs related to the department and contained annual distribution and classification of students for the last 3 years.

Although the program of studies goes through annual review, there was no evidence presented to suggest that the Department performs annual reviews of the Quality Assurance System of the programme and its operations.

Evidence presented of a recent internal quality evaluation performed on the 19/4/19. However, the AP has not seen enough evidence to justify that a formal procedure was followed in line the University's procedure for internal quality systems evaluations ("University of Crete Quality Manual", Procedure 4 and task 7.8.5).

The AP performed random sampling of procedures described in the "Proposal for accreditation" document and failed to see enough documented evidence to justify that the procedures were followed as described in the document. For instance, the "Handling of Student Complaints" procedure ("Proposal for Accreditation", page 12), was not fully followed in the cases sampled.

Overall, AP believes that there is an adequate high-level structure of a Quality Management System for the Department, however a number of critical procedures (in line with the University's quality procedures and HQA's criteria for quality accreditation) are not formulated and when followed are not properly documented.

## Panel judgement

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

## Panel Recommendations

1. The department should commit itself to put in practice quality procedures monitoring and controlling its operations and measuring its objectives. Those procedures should be part of a Department's Quality Manual which is now missing.

As a minimum the department needs to create detailed procedures and maintain documented evidence of following those procedures for:

- The periodic review of the Quality Management System for the Department
- The periodic internal quality accreditation reviews
- The evolution of its curriculum via its annual review
- Any other process which the Department believes is important for meeting its objectives in terms of quality, strategy and growth.

Those procedures should contain the appropriate structure in terms of inputs, outputs, targets, tasks, controls etc. Emphasis should be given that the Quality Manual of the Department together with the Quality Manual of the University are communicated to all the members of the Department and especially those involved in its evolution and growth. The Quality Manual should be approved by the Department General Assembly and all the Faculty members should be committed to adhere to it.

2. The AP proposes and recommends the creation of a Committee with members from the Institution's Quality Assurance Unit (QAU), internal faculty members, student representatives and administration, or the OMEA, to update the Unit's Quality Management System, in line with the Institution's Quality Management System and HQA's recommendations. The Committee should be responsible for the periodic reviews of the Quality System and the adherence to it.
3. The AP recommends the Department to review the list of KPIs and reduce the number to only those truly reflecting the strategic goals and objectives of the Department. Perhaps 42 KPIs are too many and not only their ongoing monitoring and analysis creates an unnecessary burden for the Department, but also may hide significant trends relevant for the Department. Those KPIs should be monitored at least annually and should provide input to the periodic reviews of the Quality Management System and Study Programme.

## 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 program of study is aligned with similar international programs in the area of Computing offering a rounded study of the discipline in terms of core, elective and specialised courses. It builds around the high level of educational and research work and reputation of the department staff, as well as the high quality and efficiency of the department services. The AP notes the international experience (as part of their studies, earlier employments and collaborations) of the academic staff. The delivery of the program follows international practices of the European Higher Education Area as well as the principles and guidelines of ADIP. As part of these policies, the institution's Quality Assurance Unit (MODIP) oversees the process of internal and external evaluation of the University's academic departments and their programmes. MODIPs guidelines and procedures are well documented in detail on the university website.

The overall structure of the department's degree programme aligns well with similar programs in Greece and internationally and follows the discipline's curriculum guidelines of international related organizations (ACM/IEEE). The program goes through annual periodic review. Amendments (e.g. making some courses from compulsory to elective) have been implemented

although it is not clear that the recommendations of the external evaluation have been fully implemented.

The department benefits from its close ties with FORTH/ITE, as most of its academic staff have double appointments there, that provides fellowship and employment opportunities to its students and graduates and also exposure and training of the students to industrial practices and networks. Despite this, and although a number of elective courses do exist, the exposure of students to industry should be further enhanced with stronger set of courses (e.g. made them possibly compulsory) on business practices, entrepreneurship, creativity and innovation.

The department also has a practical placement scheme that gives the chance to its students to spend time in industry. What is not evident is whether those links and exposure are fed back to the program through alignment of course content and offerings to industry current or/and future needs. The establishment of an advisory committee composed of industry stakeholders can provide this link. A number of initiatives (women in IT summer school, 30 year alumni meetings, research and industry seminars) are in the positive direction in exposing students to current trends and providing a forum for discussion with key stakeholders.

#### Panel judgement

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

#### Panel Recommendations

1. The practical training and the thesis courses should have clear course outlines/syllabus where learning objectives are set and ways of marking and monitoring their achievement are stated.
2. The department's faculty members should employ innovative and efficient procedures for collecting meaningful and actionable feedback from the students and external stakeholders. Especially care should be taken in increasing completion rates of student surveys.
3. An Advisory Committee composed mainly of members of the industry and Alumni should be established. The committee should meet regularly (AP suggests every 6 months). Recommendations by the Advisory Committee should be minuted and actions taken to address its suggestions.

### 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 majority of the courses make use of several assessment components for each course, including (but not limited to) tutoring sessions (φροντιστήρια), labs (εργαστήρια), individual assignments, and project as part of the student assessment, in addition to the final examination.

Individual and group based work is embedded in the study program and students are given resources and guidance to excel in their work. The staff seems to genuinely value student-centered learning and the relation between students and staff is excellent. The AP also felt that both the staff and the students are proud of their department and they care about its image and reputation. The learning environment (building facilities, support services - e.g. bookstore,

cafeteria) are of international standards, clean and exceptionally well maintained (when compared to similar educational institutions in Greece).

In terms of student satisfaction, the department has a practice of collecting student satisfaction surveys. This is done in electronic format. The rate of participation is low (around 10%), and, since these can provide valuable feedback to both the instructor, as well as the department, several ways to encourage and increase participation should be considered.

Despite the well-established culture of student-centered learning, teaching and assessment there exist some areas for further improvement:

Although there are student representatives in the department assembly, the students we talked to were not familiar with the names of those representatives nor seem to be in direct contact with them. It seems that problems with courses are mainly solved through informal conversations with the Chair and other involved members.

The facilities are fully accessible to students with disabilities and special technology for access to electronic resources for visual impaired students is provided at the library.

Any student complaints are usually communicated to the Chair or the department administration, who tries to resolve any conflicts before escalating it to higher levels or referring students to appropriate organizations within the University (e.g. counseling). However, there does not currently exist a clearly defined (and broadly communicated) formal procedure for student appeals and the role of the student complains support office (συνήγορος του φοιτητή) does not seem to be fully understood by the students (who in their big majority were not familiar with the existence of this office) or the staff.

The AP felt that there is not a concise and consistent set of measurable learning outcomes for the thesis and practical training that students can follow and achieve. The absence of a uniform assessment procedure for these 2 courses does not allow for a more fair evaluation process across the student body.

### Panel judgement

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

### Panel Recommendations

1. The department should ensure that all courses, including the thesis, and internship, should have course outlines with clear learning objectives and assessment rubrics tied to them to facilitate consistent and fair grading across the student body.

2. The department needs to develop effective ways to collect measurable and actionable feedback from students and increase the completion rate.



## 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

The Department has developed an induction programme to support new students transitioning from high school to the demands of university academic life. Key information which underpins the orientation of new students during their first few weeks at the University of Crete (UoC), is available on the university's website. Students commented on how useful and accessible such information is, and how it helped them gain a useful insight into their study programme, the Department, and the support services of the institution. The student guide provides a detailed description of the courses offered, including information on learning outcomes, syllabi, bibliography and assessment strategies.

As part of their studies, students have to undertake a Senior Thesis with a single supervisor. There are no measures in ensuring fairness of process and ability to be seen by a second examiner. They have also the option of a paid internship in industry. Furthermore, students are able to participate in the ERASMUS+ programme by spending one or two semesters at an overseas institution. Currently, approximately five per cent (5%) of the total undergraduate student population utilises this opportunity on an annual basis.

Part of a renewed effort to increase the support to students throughout their studies, is the role of the Academic Advisor. It appears that the students are aware of this offering and occasionally use it. The role is designed to provide both academic and pastoral support.

The Department benefits from a number of scholarship programmes, some of which are internal, while others receive external funding from the State Scholarship Foundation (IKY). The promotion of scholarship opportunities is evident in the Department's evaluation report and became clear during the AP's meetings with various groups. The Department is proactive in

trying to promote funding opportunities, such as ERASMUS+ programmes and dedicates reasonable resources in that respect.

#### Panel judgement

Principle 4: Student Admission, Progression, Recognition and Certification	
Fully compliant	<b>X</b>
Substantially compliant	
Partially compliant	
Non-compliant	

#### Panel Recommendations

N/A

## 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 Department is fortunate to have a group of high quality, committed faculty members and special teaching staff (ΕΔΙΠ). More specifically 22 department faculty and 6 ΕΔΙΠ and approximately 16 visiting instructors. They all maintain the highest standards in their teaching and research duties. The department has set up and follows transparent processes for the recruitment of qualified staff. Special emphasis is given in highlighting the importance of teaching and research.

The department makes full use of all the means available for assuring professional faculty development. CSD offers a very generous sabbatical process (1 semester every three years or 1 year every six years), which benefits a number of Faculty members every year. CSD has established clear rules for attendance requirements, performance and training. A set of well-defined and followed guidelines/conditions for employment as well as the value added by the strong ties with FORTH-ICS attracts high quality faculty members.

We observed a very significant effort of the teaching faculty to bring quality research into the undergraduate classrooms. Following a European initiative on the development of a new processor, the RISC5 technology was introduced to undergraduate students. Students are getting involved and participate in research projects as well as they are exposed to a number of software tools developed by the faculty. Many students take advantage of the very strong ties of CSD with the neighboring Institute of Computer Science and spent a lot of time at the ICS' facilities and state of the art labs. It is important to note that students unanimously praised faculty for their consistent presence and availability either online or in their offices almost every day of the week.

## Panel judgement

Principle 5: Teaching Staff	
Fully compliant	<b>X</b>
Substantially compliant	
Partially compliant	
Non-compliant	

## Panel Recommendations

1. The department is encouraged to embrace the idea for a ToT (Train of Trainers) initiative recently established by the University of Crete.
2. The department is also encouraged to establish a (once a year) self-assessment procedures for its faculty. This could be facilitated by the creation of a common questionnaire (Faculty Activity Report) for all faculty where they will be asked to report their teaching/research/service achievements/participation in the current academic year. This will help the faculty to prepare for any external/internal evaluation committee to glance over their achievements on a particular year or set of years.
3. The department would definitely benefit from the creation of a few new faculty positions, as the number of students is already high enough and the teaching load would increase in the future.

## 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 AP noted the high quality and adequate number of facilities which are dedicated to servicing the study programme and its students. Teaching and research equipment in the classrooms and laboratories is of very good quality. All lecture rooms and labs are equipped with Internet and audiovisual facilities. Auxiliary facilities are also available and accessible to students as and when they are needed. Students are well informed of the different support services available and confidently expressed that they have good access to them.

The EDIP and ETEP staff ratio is currently at a good level and should be maintained in the future too. These support staff deserve praise and commendation for their efforts to maintain the labs at a very high standard. Given how well they are qualified, the Department should always ensure that their services are utilised for the purpose of enhancing the teaching and research activities of the staff and students.

Finally, the Department offers opportunities for student exchange programmes (e.g., ERASMUS+) that encourage mobility, networking and the acquisition of new knowledge and skills.

### Panel judgement

Principle 6: Learning Resources and Student Support	
Fully compliant	<b>X</b>
Substantially compliant	
Partially compliant	
Non-compliant	

### Panel Recommendations

1. The Department, working closely with the University authorities, should maintain the generous levels of infrastructure available, and ensure the continuous upkeep of the facilities which are very much enjoyed by all the students and staff.

## 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 University and the Department have well established information management systems. The MODIP of the University of Crete is responsible for overseeing the continuous improvement of its academic provision and research outputs, as well as the efficient operation of its academic services, in accordance with international practices and the guidelines stipulated by ADIP.

A long list of KPIs have been set. The AP advises that the list of KPIs should be made shorter with manageable goals that are monitored, revised and re-defined at regular intervals (e.g. annually).

The information system managing these data (together with the ADIP system) seem to provide a wealth of information that long term can be of benefit to the department in setting goals and measuring their success or failure. The AP believes that the department needs to establish long term procedures for analysing these data and reflecting on the outcomes with an approach that monitors the implementation of long term strategies and goals.

The completion rate of student surveys is low and there seems to be a feeling by students that their input through these surveys is not taken into account. There is close contact with alumni but no clear data and statistics were provided to us to show that there is monitoring of data regarding employability of graduates.

### Panel judgement

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

### Panel Recommendations

N/A



## 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

The department maintains a very comprehensive, informative and complete website which is offered in Greek and English. The site is updated frequently with news and announcements, last update was a few days before the review. Key information regarding the unit and the study programme is available and very easy to find. The various courses of the Programme, their structure and any relevant information is available online. The Department's policy for Quality Assurance is available online but only in the Greek version of the site.

All published information is up-to-date, very clear and easily accessible. The relevant information is also understood by a layman.

The Department maintains profiles on the most popular social media (facebook, linkedin, twitter). There is a strong Alumni presence with an active Alumni Linkedin group. Based on interviews with representatives from the Department's Alumni, we observed a strong community with a desire to be involved in the operations and the growth of the department. It is notable that the Department has instituted the "30 years Reunion" event, inviting Alumni graduated 30 years before the event. Last year was the first time this reunion event was held for the 1988-89 graduates.

It is also notable that the Department is aware of the importance of its brand to non-academic stakeholders and as such, it has instituted a number of actions to further promote the department to the local community. For instance, from 2015 the Department organises educational days for local high school pupils, and from last year educational week for the same target group. Those past events are available online via recordings made.

Furthermore, the Faculty participates in a number of local events (such as the "Evolution Mondays") further promoting the Unit.

### Panel judgement

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

### Panel Recommendations

1. The AP congratulates the Department for its efforts to promote its operations to the local non-academic community and encourages the Faculty to try to do even more, and perhaps find a cost effective method to further promote the Department's brand to the Hellenic non-Academic community outside Crete. We propose the creation of a Committee to manage and amplify the outwards facing activities of the Department, in collaboration with the Institution's Public Relations Office.

## 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

The Department is deemed substantially compliant in this criterion. The review procedures for the evaluation and improvement of the study programme and the integration of the latest research into the teaching, are found to be strong. Although it appears that they monitor the learning attainment and teaching goals, there is no engagement with external stakeholders. By involving external stakeholders (private and public alike) will enable the department to stay up-to-date and tuned with technology developments, new academic processes and procedures and national business and entrepreneurial frameworks. Internally, student expectations and needs are seen as uncompromisable targets, alongside the targets which support staff development opportunities and the overall welfare of staff. However, there are no formal procedures for workload balancing and thus it appears all staff is engaged with all academic activities.

### Panel judgement

Principle 9: On-going Monitoring and Periodic Internal Review of Programmes	
Fully compliant	
Substantially compliant	<b>X</b>
Partially compliant	
Non-compliant	

### **Panel Recommendations**

1. The Department is encouraged to continue auditing and reviewing its study programmes on a regular basis.
2. It is also recommended that the involvement of external stakeholder groups is implemented.
3. A formal procedure for workload balancing would be beneficial for staff development and promotion.

## 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

In December 2011, the study programme undergone an external evaluation administered by HQA. The Evaluation Committee (EEC) concluded that:

“Overall, the EEC was impressed by the quality of students, staff, teaching, and research. There is an atmosphere of mutual respect between students and staff, a sense of pride by both in being members of the Department, and their strong desire to excel in their mission. This coupled with the strong team spirit that permeates the Department raises the EEC's confidence that the Department will continue on its path of excellence.”

The Evaluation Committee recommended a number of actions based on documented observations at Department and at Institution level for the Curriculum, teaching, research, complementary services and strategic planning. A number of them were related to the Quality System of the Department and the most notable were:

- Lack of uniformity in the marking process with various discrepancies in the success/failure rates among courses.
- Lack of a plan for the further improvement of the effectiveness of the teaching.
- Lack of consistent teaching evaluation
- Lack of monitoring of the efficacy of teaching
- Lack of appropriate procedures to formulate and periodically update a strategic plan that includes tangible and measurable mid-term goals and an ambitious but realistic long-term vision.

Furthermore, the External Evaluation Committee observed low lecture attendance, and recommended that strategies should be devised to promote attendance.

A list of Corrective and Preventative Actions (CAPA) were submitted before the accreditation review. The CAPAs presented were substantial and well-structured and the AP believes the right actions are in place and are effective. However, the CAPAs submitted only address a subset of the findings of the External Evaluation. Upon further request, and after identifying the particular findings where AP had concerns and believed there is not a relevant CAPA in place, the Institution's QAU team provided a list of strategies which addressed or will address those findings. The AP believes, based on our observation, that some of those actions are not implemented yet (for instance the Department's strategic plan) or when implemented are not effective (for instance low student participation in the surveys and not adequate evidence to justify the use of survey analysis for potential changes of the Curriculum).

To the best of our knowledge the study programme has not undergone other external reviews, however the Academic unit has undergone various external reviews from a National group (based on the Bibliometric Indices of the Faculty) and from the Times Higher Education Index and has consistently achieved high rankings. It is notable that the department ranks first amongst similar Computing departments Nationwide and very high internationally.

The AP believes that the Faculty members are aware of the importance of the external review and the entailed follow-up actions.

#### Panel judgement

<b>Principle 10: Regular External Evaluation of Undergraduate Programmes</b>	
Fully compliant	
Substantially compliant	<b>X</b>
Partially compliant	
Non-compliant	

#### Panel Recommendations

1. The Department should update the list of CAPAs based on the finding of the external evaluation review, the internal quality accreditation report and the external accreditation report. If the recommendation of principle 1, recommendation 2 for the creation of a Quality Management Committee is followed, then this Committee could also oversee and manage those CAPAs.

## **PART C: CONCLUSIONS**

### **I. Features of Good Practice**

2. There is strong evidence of a deep mutual respect between staff and students. Staff are very generous with their time, supporting the students with both academic and pastoral matters.
3. The computer science study programme features strong academic content. It is of comparable quality to the highest quality local and international programmes. It is designed to engage and challenge students, and to equip them with strong employability skills.
4. The Department and its staff are committed to supporting their students and to the principles of student-centred learning and teaching.
5. There is very strong research culture in the Department which is seen as an integral part of the identity of the study programme.
6. The founder and the leadership team of the Department are proactive, inclusive, responsive, and caring.
7. The teaching and research facilities are exceptional, with large classrooms and lecture halls, well-equipped and well-managed labs.

### **II. Areas of Weakness**

The incomplete documentation of procedures and action flow for some of the core departmental activities, which must follow Quality Assurance standards and principles adopted by the university, following the ADIP guidelines.

### **III. Recommendations for Follow-up Actions**

The summary of the AP recommendations is as follows:

1. The department should commit itself to put in practice quality procedures monitoring and controlling its operations and measuring its objectives.
2. The AP proposes and recommends the creation of a Quality Management System Committee.
3. The AP recommends the Department to review the list of KPIs and reduce the number to only those truly reflecting the strategic goals and objectives of the Department.

4. The practical training and the thesis courses should have clear course outlines/syllabus where learning objectives are set and ways of marking and monitoring their achievement are stated.
5. The department's faculty members should employ innovative and efficient procedures for collecting meaningful and actionable feedback from the students and external stakeholders.
6. An Advisory Committee composed mainly of members of the industry and Alumni should be established.
7. The department should ensure that all courses, including the thesis, and internship, should have course outlines with clear learning objectives and assessment rubrics tied to them to facilitate consistent and fair grading across the student body.
8. The department needs to develop effective ways to collect measurable and actionable feedback from students and increase the completion rate.
9. The department is encouraged to embrace the idea for a ToT (Train of Trainers) initiative recently established by the University of Crete.
10. The department is also encouraged to establish a (once a year) self-assessment procedures for its faculty.
11. The department would definitely benefit from the creation of a few new faculty positions, as the number of students is already high enough and the teaching load would increase in the future.
12. The Department, working closely with the University authorities, should maintain the generous levels of infrastructure available, and ensure the continuous upkeep of the facilities which are very much enjoyed by all the students and staff.
13. The creation of a Committee to manage and amplify the outwards facing activities of the Department, in collaboration with the Institution's Public Relations Office.
14. The Department should update the list of CAPAs based on the finding of the external evaluation review, the internal quality accreditation report and the external accreditation report.

#### **IV. Summary & Overall Assessment**

The Principles where full compliance has been achieved are: 3, 4, 5, 6, 7, 8

The Principles where substantial compliance has been achieved are: 1, 2, 9, 10

The Principles where partial compliance has been achieved are: N/A

The Principles where failure of compliance was identified are: N/A



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

## The members of the Accreditation Panel

Name and Surname

Signature

1. **Prof. Sotirios Skevoulis**  
Pace University, New York, USA
2. **Dr. Haralambos Hatzakis**  
Biotronics3D Ltd, London, UK
3. **Prof. Christos Politis**  
Kingston University, London, UK
4. **Prof. Panayiotis Zaphiris**  
Cyprus University of Technology, Limassol, Cyprus