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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 (Integrated Master) of:

Computer Science and Engineering  
Institution: University of Ioannina  
Date: July 15, 2019

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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 (Integrated Master) of Computer Science and Engineering of the **University of Ioannina** for the purposes of granting accreditation

Abbreviations and special terms (English and Greek) used in this report:

AP / Panel	Accreditation Panel / Επιτροπή Πιστοποίησης
Uoi	University of Ioannina / Πανεπιστήμιο Ιωαννίνων
EDIP	Support Teaching Staff / Ειδικό Διδακτικό Προσωπικό
ΕΣΔΠ	Internal System of Quality Assurance Εσωτερικό / Σύστημα Διασφάλισης Ποιότητας
CSE / ΜΗΥΠ	Computer Science and Engineering / Μηχανικών Ηλεκτρονικών Υπολογιστών και Πληροφορικής
HQA/ADIP/ΑΔΙΠ	Hellenic Quality Assurance and Accreditation Agency / Αρχή Διασφάλισης και Πιστοποίησης της Ποιότητας στην Ανώτατη Εκπαίδευση
IEGs/ΟΜΕΑ	Internal Evaluation Groups / Department's Internal Evaluation Committee / Ομάδα Εσωτερικής Αξιολόγησης
IQAS / ΕΣΔΠ	Internal Quality Assurance System / Εσωτερικό Σύστημα Διασφάλισης Ποιότητας
KPIs	Key Performance Indicators
QAU / MODIP / ΜΟΔΙΠ	Quality Assurance Unit / Μονάδα Διασφάλισης Ποιότητας
QAP	Quality Assurance Policy / Πολιτική Διασφάλισης Ποιότητας
ECTS	European Credit Transfer and Accumulation System
GDPR	General Data Protection Regulation
GS	Guide to Studies / Οδηγός Σπουδών
CC/ΔΜ	Course Credits / Διδακτικές Μονάδες
ΕΤΕΠ	Ειδικό Τεχνικό Εργαστηριακό Προσωπικό
CES	Course Evaluation Survey

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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 (Integrated Master) of Computer Science and Engineering of the University of Ioannina comprised the following four (4) members, drawn from the HQA Register, in accordance with the Law 4009/2011:

1. Prof. Nikitas Dimopoulos (Chair)

University of Victoria, Victoria, British Columbia, Canada

2. Prof. Yannis Dimitriadis

University of Valladolid, Valladolid, Spain

3. Prof. Georgios Giannakis

University of Minnesota, Minneapolis, Minnesota, USA

4. Assoc. Prof. Georgios Kontaxakis

Universidad Politécnica de Madrid, Madrid, Spain

## II. Review Procedure and Documentation

The Panel considered the documentation provided by the programme through ΑΔΙΠ as well as documentation provided by ΑΔΙΠ.

This documentation provided by the program included the following:

- The Department of Computer Science and Engineering accreditation report (Πρόταση Ακαδημαϊκής Πιστοποίησης) dated March 2019
- The Department of Computer Science and Engineering Guide to Studies for the academic year 2018-2019 (Οδηγός Σπουδών 2018-2019)
- The Department of Computer Science and Engineering academic regulations (Κανονισμός Σπουδών)
- The Department of Computer Science and Engineering Quality Assurance Policies (Πολιτική Ποιότητας του Προπτυχιακού Προγράμματος Σπουδών του Τμήματος Μηχανικών Η/Υ και Πληροφορικής του Πανεπιστημίου Ιωαννίνων)
- The Department of Computer Science and Engineering regulations concerning internships (Κανονισμός Πρακτικής Άσκησης) for 2017 and 2018
- The Department of Computer Science and Engineering terms of reference pertaining to student advisors (Σύμβουλος Φοιτητή)
- The Department of Computer Science and Engineering course outlines for both required and elective courses (Περιγράμματα Υποχρεωτικών Μαθημάτων και Κατ' Επιλογή Υποχρεωτικών Μαθημάτων)
- The Department of Computer Science and Engineering undergraduate program of studies objectives (Στοχοθεσία Ποιότητας ΠΠΣ)
- The Department of Computer Science and Engineering Course Experience Surveys (Υποδείγματα Ερωτ Φοιτητών\_Αποτελ Επεξ)
- The internal evaluation report of the undergraduate program of the Department of Computer Science and Engineering (Εσωτερική Αξιολόγηση του Προπτυχιακού Προγράμματος Σπουδών του Τμήματος Μηχανικών Η/Υ και Πληροφορικής: (a) Β8.1 Πρακτικό-Απόφαση 2η ΜΗΧΑΝ ΥΗ\_ΜΟ.ΔΙ.Π ΙΩΑΝ (b) Β8.2 Κατάσταση Ευρημάτων Μηχανικ ΗΥ και Πληροφ (c) Β8.3. ΕΡΩΤΗΜΑΤ ΕΣΩΤ ΑΞΙΟΛΟΓ ΜΗΧΑΝΙΚΩΝ ΗΥ ΠΛΗΡΟΦ)
- The Department of Computer Science and Engineering HQA Reports of quality indicators (a) Β9. ΔΕΔΟΜΕΝΑ ΟΠΕΣΠ\_ΜΗΥΠ 2015-2017 (b) Β9. ΔΕΔΟΜΕΝΑ ΟΠΕΣΠ\_ΤΑΥΤ\_ΤΜ\_ΜΗΥΠ 2015-17
- The Department of Computer Science and Engineering supplemental terms (Β10. ΠΡΟΣΘΕΤΟΙ ΟΡΟΙ)
- Progress report arising from the 2011 external evaluation (Β11.1 ΕΚΘΕΣΗ\_ΠΙΝΑΚΑΣ ΠΡΟΟΔΟΥ)
- Questionnaires targeting (a) visitors, (b) graduates (c) employers (d) social stakeholders (e) graduating students (a) Β11.2α ΕΡΩΤΗΜΑΤΟΛΟΓΙΑ Ακαδημαϊκών Επισκεπτών ΜΗΥΠ

- (b) Β11.2β ΕΡΩΤΗΜΑΤΟΛΟΓΙΑ ΑΠΟΦΟΙΤΩΝ ΜΗΥΠ
- (c) Β11.2γ ΕΡΩΤΗΜΑΤΟΛΟΓΙΑ ΕΡΓΟΔΟΤΩΝ ΜΗΥΠ
- (d) Β11.2δ ΕΡΩΤΗΜΑΤΟΛΟΓΙΑ ΚΟΙΝΩΝΙΚΩΝ ΦΟΡΕΩΝ ΜΗΥΠ
- (e) Β11.2ε ΕΡΩΤΗΜΑΤΟΛΟΓΙΟ ΤΕΛΕΙΟΦΟΙΤΩΝ ΜΗΥΠ

The documentation provided by ΑΔΙΠ included the following:

- Reports of quality indicators for the Department of Computer Science and Engineering and for the years 2015-2018
- Reports of quality indicators for the undergraduate program of studies of the Department of Computer Science and Engineering and for the years 2015-2018
- Guidelines for accreditation (ODIGOS PISTOPOIISIS\_en)
- STANDARDS FOR QUALITY ACCREDITATION OF UNDERGRADUATE PROGRAMMES (P1\_STANDARDS FOR QUALITY ACCREDITATION\_PROGRAMME\_EN)
- Guidelines for the members of the accreditation panel
- Mapping Grid
- 2011 External Evaluation Report

The Accreditation Panel (aka AP or simply Panel) met with members of HQA (the HQA President Prof. Pantelis Kyprianos, the HQA director Dr. Christina Besta, and Ms. Vasiliki Kyriakousi) at 9:30 am on Monday, July 8, 2019. The members of HQA briefed the Panel on the HQA's mission, standards and accreditation process.

At 14:30 of the same day, the Panel met in camera to prepare for the visit, allocated tasks to members of the panel, and reviewed the findings to that point.

The Panel flew to Ioannina at 20:30 the same evening.

The following day, July 9, 2019, the Panel had a sequence of meetings at the Department of Computer Science and Engineering with members of the academic community and external stakeholders as follows:

- 9:30-10:40 Meeting with the Vice-Rector and President of MODIP, the Dean of Engineering, and the Head of the Department of CSE
- 10:50-13:20 Meeting with OMEA and MODIP representatives
- 13:25-14:15 Meeting with faculty members
- 14:30-15:30 Meeting with students
- 15:30 -16:30 Meeting with graduates
- 16:35-17:00 Meeting with employers and social partners
- 17:00- 17:30 The Panel met in camera to discuss the findings of the day and prepare for the visit the following day (July 10, 2019).

On July 10, 2019 the schedule was as follows:

- 9:30-10:00 The Panel met with the Rector and the Vice Rector of the University

- 10:15-11:30 The Panel toured the facilities of the department including classrooms, computer room, laboratories, student and faculty office spaces
- 11:30-12:00 The Panel met with representatives of OMEA and MODIP and discussed points that needed further clarification
- 12:00-12:30 The Panel met in camera to summarize the findings of the visit
- 12:30-13:00 The Panel met with the Vice Rector, the Head of the Department and members of OMEA and MODIP and presented a summary of the key findings of the visit.

The Panel returned to Athens and at the hotel at midnight on July 10, 2019.

The names of the individuals present at the meetings are with ADIP.



### III. Study Programme Profile

The University of Ioannina was established in 1964 with one department in the School of Philosophy.

The University of Ioannina includes eight Schools, and 15 departments. The student body counts 25,233 undergraduate and graduate students, while there are 473 faculty members.

The University of Ioannina has recently absorbed the TEI of Epirus which added eight more departments distributed over many cities in Epirus.

The campus of the University of Ioannina is about six km from the center of town and covers an area of 3.6 square km. Its buildings have a usable space of 236,000 square meters.

The precursor of the current Department was established in 1990 as the Department of Computer Science in the Faculty of Science.

The Department transformed to the Department of Computer Science and Engineering in 2013 and was included in the newly established School of Engineering in 2017.

The Department now offers a 5-year engineering degree covering the areas of Computer Engineering and Informatics.

The faculty complement<sup>1</sup> 26 regular faculty and one emeritus professor as follows: 10 Professors, 11 Associate Professors and 5 Assistant Professors.

Additionally, there are 2 teaching staff (ΕΔΙΠ), 2 technical staff (ΕΤΕΠ) and three administrative staff (διοικητικοί).

There are 1755 active undergraduate students in the program while the program admitted 268 students in 2018.

The Department is housed in its own building of 12,000 square meters and it includes lecture halls, laboratories, a data center, and faculty and (graduate) student offices.

The facilities, during our visit, were well maintained and clean.

The department graduates about 50 students annually.

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<sup>1</sup> As per the material in file “Τρέχοντες Αριθμοί” communicated by the Department during the Panel’s visit at the Department.

## 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 Department in its Accreditation Proposal lists a number of objectives (c.f. section 2.2). Such objectives could be set as a consequence of, and supportive of a strategic plan, but they cannot be considered as constituting the strategic plan itself. For example, the question of which area of Computer Science and Engineering does the Department consider of vital importance and why is not answered. Setting such an objective in the Strategic Plan, would inform subsequent decisions as to the allocation of human or otherwise (i.e. infrastructure) resources. The stated goal of enhancing the infrastructure and increasing the number of faculty and staff" is not strategic in the sense that it does not set the proprieties in conjunction to a long-term evolution of the Department

Further, the panel could not identify the existence of an institutional (Uoi) nor a School of Engineering Strategic Plan. Such plans are necessary as they inform the formulation of the Departmental Strategic plan.

There are quality assurance and monitoring units at two levels: MODIP at the university level, and OMEA at the department level. Representatives from both MODIP and OMEA were present at the site visit and there was evidence that they cooperate well. The Department, through its Head and OMEA expressed their firm commitment to apply appropriate measures that would lead to the programme's continuous improvement. Statistical data from student evaluation questionnaires are publicly available since the academic year 2013-14 and are posted on its website<sup>2</sup>. The Quality Assurance Policy (QAP) includes a set of general objectives for the Department's quality goals and describes a set of measures for their achievement. Moreover, there is evidence that an annual review and an internal audit of the quality assurance system of the programme has been implemented, at least for 2018-2019.

The study programme refers to a typical Computer Science and Engineering (CSE) curriculum. The programme asserts that the learning outcomes and qualifications acquired by the graduates are in accordance with the European and the National Qualifications Framework for Higher Education.

The Department has established a series of goals for the continuous improvement of the study programme with respect to its student-centered orientation, learning outcomes, teaching methods and research. The Department has selected a number of standard key performance indicators, developed and monitored by ADIP, and uses these to track progress towards the said goals.

However, the absence of a strategic plan, has not provided the opportunity to sufficiently articulate the rationale of selecting the particular KPIs nor that the selected set of KPIs is complete. On the other hand, selecting among standard KPIs provides the opportunity of easy comparison with other institutions who have adopted the same or similar KPIs.

OMEA presented to the Department's General Assembly its initial proposal for the Department's QAP in January 2019. It is rather early to affirm that this QAP has been sufficiently communicated to all parties involved (teaching staff, researchers and graduate researchers, undergraduate students, and administrative personnel).

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<sup>2</sup> <http://www.cs.uoi.gr/index.php?menu=m13>

## Panel judgment

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

## Panel Recommendations

- R1.1 It is recommended that the Department define its long-term strategic plan, including its vision and mission statements towards the comprehensive undergraduate education of computer scientists and engineers, as well as the main values on which its overall operation is based. In accordance to these elements, the Department should revise, concretize and discuss in depth its Quality Assurance Policy, its main KPIs and the ways to achieve them.

## 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

There is evidence that the study programme has been designed in a way to adjust to the current trends in the area of computer science and engineering, and to address the demand of qualifications required by the labour market.

The curriculum includes a set of mandatory and a set of elective courses without specialization foci. The required (core) courses have been designed following international practices for the area of CSE studies and cover areas from hardware (electronics, digital design, computer architecture) to software and algorithms and include subjects in telecommunications, signal processing, and systems.

The study programme has been structured in core and elective (only in the last 5 semesters) courses, thus providing a certain degree of flexibility in terms of student paths. The programme also allows for a maximum of 12 course credits in courses offered by other departments. The Department has informed the AP that instructors and student advisors *informally* advise the students as to the elective courses to be taken. However, there are no formal and explicit specialization paths that are recommended to the students, and there is no clear guidance to the students on the paths to follow. It should be taken into account, that the Student Advisor has not been fully applied yet in practice (although the regulations for Student Advisor have

already been published and an initial assignment of students to advisors was made for the first time during the 2018-2019 academic year).

Several courses include activities that promote development of individual and group skills. Courses in entrepreneurship offered by the Economics Department are open to students in CSE. However, there is no explicit, consistent and coherent plan for the development of general (“soft”) skills, mandatory to all students, which go beyond the specific contents of a course and are crucial for an engineer. These complementary learning outcomes such as communication skills, life-long learning, team work, ethics, economics, law, and impact of technology on society are not supported globally, synergistically and coherently at a programme level, and it is unclear how they are supported and assessed at a course level.

Despite the fact engineering involves design as an important step to solve complex problems, the study programme does not foresee courses that deal with design thinking and innovation-related methodologies. Although there are several courses that have design in their title, these typically involve design techniques in a rather narrow discipline, such as digital design.

OMEA submits, on an annual basis, all its findings to ΜΟΔΙΠ, which in turn provides feedback to the department as indicated in document B8.2 dated March 20, 2019.

Student representatives are invited to participate in the General Assembly (Department Council), OMEA and the Curriculum Committee. However, the student body has declined naming its representatives in the council/committees. However, their opinion is reflected through the course experience surveys and the graduating students’ surveys the programme collects regularly.

The Department is to be congratulated for commencing the process of engaging external stakeholders having organized a workshop (ημερίδα) with participation from industry and alumni. However, there does not seem that there is an organized and systematic way to collect the opinion of the external stakeholders (i.e. industry, local government, other programs at UoI or other Universities) and assess the impact of its graduates in the labour market.

The program is organized in such a way so that the prerequisite knowledge in a course is covered in previous terms. However, there are no prerequisites established and a student who has failed a course, can still attend subsequent courses. The programme is trying to minimize the number of courses a student has not passed, by limiting the number of courses he/she can register in to 9, which must include all courses the student has not yet passed. Thus a student, who has not passed 9 or more courses, cannot register for a new course.

All courses have been assigned a credit and workload estimate according to the European Credit Transfer and Accumulation System (ECTS). However, the program is designed based on course credits (διδακτικές μονάδες) and not ECTS units. The AP was informed that University regulations require that the Program use course credits rather than ECTS.

The Program allows for practical training of at least two months. This is an exceptional initiative in that it allows students to gain work experience before they graduate. From the published statistics, 3,25% of the active students have taken advantage of it. However, the percentage of graduating students who have participated in practical training exceeds 50%, a very strong indication of the desirability of this opportunity by the student population.

The Department's Accreditation Proposal sets as a goal the linking and promotion of research with teaching. It also mentions that for the Diploma Thesis, the students will be given the opportunity to use their knowledge of the latest research methods and tools. These are laudable goals. Further, the AP was informed that the exit questionnaires completed by the graduating students are designed to assess the students' satisfaction with the program and whether the program was providing skills in line with the job market. However, it is not clear whether this data have been processed yet and the extracted conclusions informed the process of improving the program.

Approval of the programme of studies adheres to the Greek legal framework governing Institutions of Higher Education.

### Panel judgement

<b>Principle 2: Design and Approval of Programmes</b>	
Fully compliant	X
Substantially compliant	
Partially compliant	
Non-compliant	

<b>The Accreditation Panel agrees that this Programme leads to a Level 7 Qualification according to the National &amp; European Qualifications Network (Integrated Master)</b>	YES	NO*
	X	

*\*In case of negative judgement, please justify*

### Panel Recommendations

- R2.1 It is recommended that the program of studies use the ECTS system in its design. This will result in a program that would more accurately reflect the expected work load to the individual students.
- R2.2 It is recommended that prerequisite chains be established so students are aware of the previous knowledge and skills that are required for the successful completion of a course. In case that establishing prerequisite chains proves practically impossible, the 9 course limit should be lowered to a number that represents not more than one semester's worth of courses.
- R2.3 It is recommended that an Advisory Board be established to provide feedback on the structure orientation and content of the program.  
Such an Advisory Board includes external stakeholders such as but not limited to academics from other related programs within or outside UoI, former graduates of the program, representatives of the local government or local industry. The members of the advisory board are volunteers, at arms-length and selected by the department to strictly provide advice.

- R2.4 It is recommended that the study programme should encompass the concept of engineering design as a superset of the individual competences acquired by its graduates. Engineering design combines the disciplinary skills but also addresses issues that are not well understood or specified. The process is open-ended and the resulting artifact is not unique, not predetermined and not repeatable (i.e., every designer may come up with a different and equally valid solution than their other colleagues). In that sense, the study programme should include courses that give the opportunity to students to familiarize and practice the design thinking process<sup>3</sup>. It is advisable that such courses are spread throughout the curriculum (in some programmes there is a design course every year) and culminate with a major capstone design project before graduation.
- R2.5 It is recommended that the Department should consider including in the current curriculum courses in ethics, communication (technical writing, oral presentations and public speaking), economics, entrepreneurship and methodologies (i.e., project management and development, quality, financial management), law, personal skills (i.e., creative thinking, time management, negotiation skills, conflict resolution), the impact of technology to society and protection of intellectual and industrial property, which are currently not adequately covered by the study programme.

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<sup>3</sup> A useful definition of design is the following, copied from the Canadian Engineering Accreditation Board “Engineering design integrates mathematics, natural sciences, engineering sciences, and complementary studies in order to develop elements, systems, and processes to meet specific needs. It is a creative, iterative, and open-ended process, subject to constraints which may be governed by standards or legislation to varying degrees depending upon the discipline. These constraints may also relate to economic, health, safety, environmental, societal or other interdisciplinary factors.”



### 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 students participate in completing the Course Evaluations at about 25%. They also participate in completing a graduation survey that evaluates the overall program. The Department was able to collect 55 of these questionnaires covering all the graduates in the past two years. The participation rates for both surveys are deemed satisfactory

The use of paper-based surveys during the final sessions of a course, may add a bias to the results. There is margin for significant improvement in terms of carrying out the course and program surveys, and especially processing and extracting useful recommendations, that may lead to improvements of the learning and teaching process.

According to the Guide to Studies (Οδηγός Σπουδών) and the Course Descriptions (Περιγράμματα Μαθημάτων), most courses include lectures, laboratory and problems/exercises. A later document (ΔιδακτικέςΜεθοδοι.docx) provided by the department details these methods on a per course basis and highlights the fact that the standard lecture approach is used predominantly. Some courses include projects to be performed individually or in groups. The detailed information on courses is not always consistent and complete across multiple different sources (Guide to Studies, course descriptions, course websites, ecourse, eclass, etc.).

There is some evidence that multiple delivery modes and pedagogical methods are employed, in spite of the lack of support from the Department or the University regarding teaching professional development, the lack of a teaching and learning support unit, or any structured initiatives regarding educational innovation (e.g. projects or awards for teaching and learning innovation). Some deficiencies are also reflected in the way ECTS have been applied, as indicators of student workload and a student-centric approach.

Due to the diversity of teaching/learning methods in several courses (projects, lab exercises), the role of students as active learners is somewhat promoted. Disproportionally large enrollments compared to the faculty complement impede a student-centered learning environment. However, there is room for improvement, by adopting a number of specifically developed educational techniques and platforms.

Moreover, students and graduates have expressed concerns on the limited feedback provided by instructors, e.g. on written reports and exercises. Although the large number of students prevent the faculty of providing timely and detailed feedback for all the work done by the students, the AP is convinced that focused feedback on some strategically chosen student work could provide major improvement in student engagement and learning outcomes.

Final Exams are weighted too heavily in calculating the course grade. This is not congruent with a student-centric approach to learning. Midterms, homework, quizzes, labs could contribute to the final grade, and provide an incentive to the students to keep up with their studies throughout the term. Establishing a minimum final exam grade to ensure that a student has achieved a minimum competency is also a possibility.

A number of students and graduates expressed concerns about harsh grading, while faculty strive for higher pass rates.

Although each course has established learning outcomes, these are not always assessed. The AP was not provided with the description of a process of assessing the learning outcomes.

The Panel was not shown any evidence that there is a formal appeal procedure for a course grade. However, the Guide to Studies describes a formal written appeal but only in case a student has failed a course repeatedly. In addition, there is no readily available and formal procedure for students to file a complaint individually.

Student grades are decided by individual professors because courses are taught by individual instructors.

Finally, the Diploma Thesis grades are skewed towards the maximum grade (10/10) without an explicit grading policy in place.

### Panel judgement

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

### Panel Recommendations

- R3.1 Develop a more structured approach to flexible learning paths. Establishing specializations may help guide students in selecting their learning path. The Student Advisor may play a crucial role in helping students select specialization path(s) if so desired.
- R3.2 Increase the use of multiple delivery modes and pedagogical approaches, and especially enrich activities of active learning, taking advantage of ICT platforms and tools. Consider flipped classroom, clickers, game-based platforms, group learning activities among others.
- R3.3 Learning outcomes should be properly assessed in the evaluative activities of each course.
- R3.4 Develop a rubric to assess the Diploma Thesis, in conjunction to it being assigned a grade. Otherwise, adopt a Pass/Fail grading system for the Diploma Thesis.
- R3.5 Establish a formal and easily accessible channel for student complains and suggestions, e.g. through a web-based facility, in order to provide more ways of student involvement in the teaching and learning process. Encourage students to express their satisfaction and further analyze and apply eventual enhancements based on student feedback.

#### **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 established and applied regulations in several aspects of all phases of studies, according to the general guidelines provided by the University. The Guide to Studies includes clear procedures for practical training or student mobility; norms regarding teaching and accreditation of English as a Foreign Language; admission of students and graduates from other Universities; examination periods and enhancement of course grades; registration in courses, and Diploma Thesis.

A welcome day allows newly registered students to get introduced to the curriculum in a rather smooth way. However, no special and systematic actions are taken to detect and eventually remedy problems caused by insufficient prior student knowledge and capacities (e.g. through special training activities).

Each student is assigned a faculty member who acts as a Student Advisor; this is an excellent practice. It is not clear how many students have used the advisor to facilitate their studies. The panel has heard from the students that in general the faculty is present and available to help them with their inquiries. However, the students we interviewed were not aware of the Student Advisor specifically assigned to each individual, although they admitted they have often contacted professors in an ad hoc manner in order to receive advice on issues related to the study programme.

Regulations on the number and type (i.e., core or electives) of courses a student can register in, are present-

The Diploma Supplement has been developed and implemented, but has not yet been in effect. The Panel was assured that the programme will commence issuing Diploma Supplements in September 2019.

Each student's record is maintained centrally at the general information management system. However, due to European and national legislation of General Data Protection Regulation (GDPR) these records are not accessible by the Student Advisor, or even the Department Chair, unless explicit consent is given by students. Thus, it is quite difficult to detect individual problems and provide suitable personalized advice. In any case, authorized personnel may utilize aggregate data (learning analytics) in decision making processes.

Mobility through international (Erasmus) programs is adequately regulated. However, the percentage of student participation is quite low ( $\Delta 4.30=0,13\%$  for outgoing Erasmus students and  $\Delta 4.35=0,0\%$  for incoming Erasmus students in 2017-2018).

Students are encouraged to do practical training at the private and public sector and the demand for it (practical training) has been growing over the years. However, its two-month duration is considered to be too short, by both students and external stakeholders, to sufficiently develop job-specific or general soft skills.

The Guide to Studies includes the number of ECTS, credit units and the nominal number of hours, per course. However, credit units are still used as the prevailing load indicator not aligned with the EU guidelines. Students reported that the distribution of workload across the semester is uneven, and deadlines for report submissions or progress exams are not sufficiently coordinated across courses.

### Panel judgement

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

### Panel Recommendations

- R4.1 Apply the Diploma Supplement regulation as soon as possible.
- R4.2 Encourage the student body to take advantage of the Student Advisor through perhaps targeted advertisement.
- R4.3 Analyze the causes of low student mobility and take appropriate actions to increase the percentage of outgoing and incoming Erasmus students.
- R4.4 Increase the average duration of practical training above the currently set (by the Ministry) limit of two months.

## Principle 5: Teaching Staff

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

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

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

### Study Programme compliance

The teaching staff have very good research profiles and are well prepared to teach in their respective areas of expertise. Most professors teach courses that are closely related to their research interests. Undergraduate students are encouraged to, and are attending research seminars given by faculty and external visitors.

Teaching staff at UoI-CSE has been selected and promoted following a concise, transparent and objective process, that is compliant with the guidelines provided by the Ministry of Education in Greece. Pertinent reports are maintained in electronic form. It is not clear how teaching performance is considered by the (external) promotion committees and whether pertinent guidelines exist. There is no peer evaluation of teaching.

The average teaching load per faculty is about 8hrs per week, which certainly exceeds the minimum requirement prescribed by the Ministry of Education (6hrs/week/faculty member). Although the minimum requirement is met, it is less clear whether and how the allocation of teaching load relates and fits the gamut of academic activities, namely research, service, and funding efforts, that the staff are also involved. There is no “formula” to assess the teaching load that also takes into account the aforementioned activities; along with means of reducing the teaching load, if needed, through the recruitment of teaching assistants (possibly supported by public and private sources of funding).

The performance of teaching staff is assessed regularly via paper-based evaluation forms filled in by students on a semester basis.

In addition to the results of the course evaluations returned to the instructors for them to calibrate teaching performance, these results are used by the undergraduate curriculum committee, and also during the promotion phase. However, there were no examples substantiating the use of course evaluations in improving individual courses or the curriculum itself, nor how were they used to improve the teaching effectiveness of instructors.

Described at a high level, this is effected through the Erasmus+ program, as well as international conferences and visits to other domestic and international institutions that the teaching staff takes advantage of.

A major asset of UoI-CSE is unquestionably the collegial atmosphere, shared goals, and team work among faculty, administrative support, and students toward achieving their academic goals – what is conducive to attracting high-caliber faculty. There is no evidence of efforts devoted to ensuring gender diversity, and also identifying the poles of UoI-CSE attraction. The strategic plan for research is delegated to that of the University-wide research committee that is well articulated, although somewhat generic, and thus possibly less constructive. The high percentage of MSc Theses (about 67%) resulting in journal or conference publications reflects clearly a healthy productivity. Likewise the 1.5 journal and 2.5 conference papers per faculty, together with the cumulative 2.5K Google Scholar citations across CSE researchers, indicate a research active faculty. The number of Ph.D. graduates per faculty per year is low (currently this critical metric is at 0.075). The faculty have received several best paper awards;

The commitment to pursue “hot CSE-related” topics is mentioned in the internal evaluation, but specific areas need to be identified especially for integrating teaching with research efforts.

### Panel judgement

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

### Panel Recommendations

- R5.1 Establish procedures for professional development activities for teaching and learning. Establish a teaching and learning support unit ideally at the University level, and promote novel pedagogical methods and initiatives through educational innovation projects and awards.
- R5.2 Institute the notion of “faculty mentors” and means of rewarding teaching excellence.
- R5.3 Institute peer evaluations as an additional means of evaluation of teaching performance.
- R5.4 Design a “teaching formula” to optimize allocation of teaching load in conjunction with research and funding efforts.
- R5.5 Identify unique UoI strengths to increase mobility, and strengthen the integration of CSE teaching with hot multidisciplinary research topics.

## Principle 6: Learning Resources and Student Support

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

*Institutions and their academic units must have sufficient funding and means to support learning and academic activity in general, so that they can offer to students the best possible level of studies. The above means could include facilities such as libraries, study rooms, educational and scientific equipment, information and communications services, support or counselling services.*

*When allocating the available resources, the needs of all students must be taken into consideration (e.g. whether they are full-time or part-time students, employed or international students, students with disabilities) and the shift towards student-centred learning and the adoption of flexible modes of learning and teaching. Support activities and facilities may be organised in various ways, depending on the institutional context. However, the internal quality assurance ensures that all resources are appropriate, adequate, and accessible, and that students are informed about the services available to them.*

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

### Study Programme compliance

The Department has all the necessary facilities (classrooms, laboratories, IT infrastructure, support section) for the number of incoming students requested by the Department each academic year. However, the Ministry admits almost twice that number of students, resulting in significantly overcrowding the facilities.

The Department's main building can accommodate the needs of the current teaching, research and administrative staff in a comfortable and enjoyable environment. The overall infrastructure is well maintained, clean and free of graffiti. Students and staff all actively contribute to the preservation and maintenance of the building and the infrastructure.

Accessibility to the building and its facilities is ensured by appropriate ramps and spacious elevators. Auxiliary spaces, a seminar room, a meeting room, a reading room, and space for student initiatives, such as the IEEE Student Branch are comfortably housed within the building.

Classrooms are well equipped with all necessary technological devices and other means to support teaching.

Computer teaching laboratories are also adequately equipped and the Department has excellent and spacious facilities for the support, maintenance and proper operation of its computing systems which are top of the line.



The administrative staff accompanied the Panel during the site visit of classrooms and laboratories and it is evident that they are well aware of the needs of the Department and make efforts to ensure the smooth operation of the student support services.

The Department's regular budget has suffered an important decrease after 2010 (from 91.575,00 € in 2010 to a low of 28.750,00 € in 2016 and 2017), with signs of a reversal of this trend during the past two years. This decrease in funds is inversely proportional to the number of students admitted at the programme, which keeps increasing each year.

The configuration and capacity of classrooms does not adequately support an efficient student-centric learning. Classroom capacity is not sufficient to cover the needs of all students admitted in the programme.

### Panel judgement

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

### Panel Recommendations

- R6.1 Reconsider the configuration of classrooms and teaching laboratories in order to make them more student-centered friendly. Such reconfiguration plans might imply further modifications of the teaching processes, for example the creation of smaller classrooms would accommodate splitting large classes into smaller sections. The overall space of the Department's main building is sufficient, however some remodeling and perhaps reassigning is necessary, especially since the number of students admitted each year is significantly higher than the one for which the building has been originally designed.
- R6.2 Explore the possibility of centralizing classroom allocation across the campus.

## 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 Department is following HQA's guidelines and is collecting adequate statistical information comprising survey results as well as a variety of indicators, such as the student population (male/female/special-needs) the number of registered students, the student intake and the length of times to graduation.

It also collects statistics on the publications and citation record of the faculty as well as statistics on the infrastructure and budget, but no statistics on the number of grants and the level of research funding are included in the collection of indexes maintained by ΑΔΙΠ. However, the Department keeps track of the funding obtained by the faculty.

Absent are some statistics referring to the actual number of graduating students and its normalization with reference to the expected graduating students of a particular class.

The Department is to be commented for their tracking of the employment and further education of their alumni.

Course learning outcomes as well as programme attributes have been established and published in the Guide to Studies (Οδηγός Σπουδών). Also, a mapping of courses to program attributes has been established. However, no correspondence of the program attributes to the learning

outcomes (or to intermediate indicators) has taken place. Further, no measurement of the program outcomes has taken place either.

The learning outcomes and program attributes are important pieces of information in managing and ensuring quality of the program of studies. Establishing these outcomes/attributes is the important first step in using these aspects.

### Panel judgement

<b>Principle 7: Information Management</b>	
Fully compliant	<b>X</b>
Substantially compliant	
Partially compliant	
Non-compliant	

### Panel Recommendations

- R7.1 It is recommended that the numbers of graduating students as absolute numbers and as a ratio to the number of students expected to graduate normally (i.e. at 5 years) be collected. These indicators will help predict the evolution of the number of registered students and as such the required resources.
- R7.2 It is recommended that the program attributes and course learning outcomes be measured and analyzed. As a first step, one needs to correspond the program attributes to the course learning outcomes.
- R7.3 It is recommended that data about the career paths of the graduates should be systematically analyzed.

## 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 CSE department website includes the information needed for the undergraduate Program of Studies and the Guide to Studies that is updated on a yearly basis. The website includes the curriculum and other student resources, as well as biosketches, publications, and points of contact for the CSE faculty and staff. Both Greek and English versions of the website are available, and are also updated regularly (except for assessment metrics and employment information). Although the website design and particularly people websites could benefit from more graphical information (e.g., on research projects) that can be better understood by the general public, the basic information is presented systematically and in a uniform style – what could be used as a template for other UoI departments. Dissemination is also effected through email to group(s) of students for timely acquisition of information.

Public information of interest that was deemed missing or less complete includes: i) Learning and assessment procedures were not presented in a uniform and consistent manner ii) points of pride, practical training as well as job opportunities and placement of CSE graduates; iii) links with the department- and university-level Quality Assessment Unit (QAU) websites, that are abbreviated as OMEA and MODIP; and iv) a regularly updated item on frequently asked questions (FAQ).

#### Panel judgement

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

#### Panel Recommendations

R8.1 Include UoI's external evaluation and accreditation (likewise for CSE when available).

- R8.2 Upgrade the website design to accommodate more graphics that is easier to access by CSE students, and all other stakeholders, including alumni, industry employers, and the public.
- R8.3 Include the CSE's mission and vision statement when available.

## 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 study program has been transformed in 2013 from a 4-year programme to a 5-year engineering Integrated Master's programme, partially as the result of the 2011 external evaluation.

Student course evaluation questionnaire responses are shared with the respective instructors and processed by OMEA. Average results are discussed at the Department's General Assembly and particular cases can be also addressed. Students occasionally participate at the General Assembly, especially when there are issues of their interest to be discussed with the Department.

Students interviewed by the Panel have overall expressed their satisfaction with the programme, the teaching methodologies, the availability and friendliness of the teaching staff and the quality of the infrastructure and equipment available.

It was not sufficiently clear whether the results of the analysis of the evaluation questionnaires are exploited towards the revision and improvement of the quality of teaching in individual courses. Although average scores are extracted and published at the Department's website, there was no sufficient evidence that detailed conclusions on each course, as well as on the teaching qualities of each instructor, are extracted, analyzed and adequately acted upon.

Students shared with the Panel that a small number of instructors tend to mark unfairly hard and/or expect from them an excessive amount of learning effort in order to achieve a passing score, whereas at other Universities they believe a student might reach much higher marks while acquiring equivalent competencies.

Students also commented that a large percentage of their colleagues, who might even reach 30% of the total students population, are working (either with part-time or full-time employment). This has severe repercussions in the study performance of those students and negatively affects their learning outcomes.

The programme’s periodic review and revision does not adequately consider the opinions or needs of the external stakeholders, especially from those who conform the professional sector and the labor market. Representatives from technology based companies of the area, who currently employ graduates from the programme, have commented that their connection with the University and the Department is not as strong. There is no significant input coming from them towards the continuous improvement and revision of the study programme.

### Panel judgment

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

### Panel Recommendations

- R9.1 It is strongly recommended that the Department establishes an External Advisory Board, comprised in principle of representatives of the industrial sector of the city and the region, to strengthen the ties of the Department with local industry and non-profit/government sector, who are employers of a significant fraction of the department’s graduates, and provide practical training positions to students. Such Board would provide valuable feedback on the study programme from the perspective of the changing needs of industry and society, and also contribute to the Department’s fund raising towards fellowships, equipment renewal or practical training of more students in the industrial sector of the region.
- R9.2 Evaluation questionnaires offer a powerful instrument for the quality improvement of teaching. The Panel strongly recommends that suitable processes are implemented to use the data extracted from these questionnaires to promote a culture of continuous improvement of the course materials and the delivery of classes. For example, instructors with very low ratings could be asked to submit a plan of improvements in the course materials and teaching. The OMEA can follow up in subsequent years to confirm that improvements were indeed made, as reflected in the questionnaires. This will convey the message to the students that their opinion indeed matters, which will further improve the response rate of the questionnaires.

## 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

An external evaluation of the Undergraduate Program was carried out by HQA on June 2011, while the University Quality Assurance Program was accredited on November 2018. This is the first study programme of the University that has undergone the accreditation process. No other external reviews by Agencies other than HQA were carried out for this program.

The internal quality assurance team (OMEA) of the Undergraduate Program delivered the progress report, which was internally evaluated by the University MODIP on March 2019. According to Annex B11.1, the progress report includes a systematic mapping between recommendations by the External Evaluation panel, the results that have been achieved and the actions that conduced to such results.

Although OMEA and MODIP have been actively involved in the follow up of the External Evaluation process and the production of the progress report, graduates and external stakeholders reported that they were not informed and they did not participate in the follow-up process. There is some evidence that the academic staff was informed and participated in setting up the goals, actions and follow up of these actions. Also, professors expressed their awareness of the quality assurance program and the accreditation process, although it is unclear whether they participated actively in the generation and discussion of the progress report.

It is noteworthy that on June 2013, the new Undergraduate Program was approved, which included major changes, since it implied a conversion to a five-year engineering degree, the coexistence of two undergraduate programs, and even the transition mechanisms for students and graduates of the previous program. The Technical Chamber of Greece (TEE) was a major stakeholder that was involved in the approval process of the new engineering degree.



The development of the new Undergraduate Program led to an update of the contents and overall design of the program. Such redesign took into account most of the recommendations made by the External Evaluation panel.

Some limitations of the University quality assurance system were reported in the Accreditation Report issued in November 2018. Such limitations affected directly or indirectly the types and effectiveness of actions. Especially, an insufficiently updated University strategic plan is strongly correlated with the lack of an explicit Departmental strategic plan and definition of short, medium and long-term goals.

### Panel judgement

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

### Panel Recommendations

- R10.1 Actively involve external stakeholders and graduates in the follow up process after each accreditation cycle.
- R10.2 Indicate quantitative measures with respect to the degree of achievement of advances in the progress report, and associate this information with the establishment of goals.
- R10.3 Establish a strategic plan that takes into account the analysis of the advances and the recommendations made by the external evaluation and accreditation panels.

## **PART C: CONCLUSIONS**

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

- The faculty comprises accomplished researchers.
- The building infrastructures are well maintained and spacious.
- The faculty is present and reachable by the students.
- The Department is aware and positive of the quality assurance process.
- The graduates are appreciative of the knowledge and skills they have acquired through their studies in the programme.

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

- There is no strategic plan.
- The program of studies has not utilized ECTS units to better determine student workloads and contribute to the student-centric education.
- The program does include courses in complementary studies nor Engineering Design.
- The program has not established a substantial and consistent way of consulting with external stakeholders including social partners, industry and other academic units.
- The absence of adequate teaching assistants has resulted in an increased faculty load.

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

The following recommendations have been extracted from the recommendations found in the ten principles above and are divided into two groups. The first comprises recommendations the Panel thinks will most effectively help the program improve its Quality Assurance processes and standards while the second group comprises a set of useful recommendations.

#### **Group 1 Recommendations**

- R1.1 It is recommended that the Department define its long term strategic plan, including its vision and mission statements towards the comprehensive undergraduate education of computer scientists and engineers, as well as the main values on which its overall operation is based. In accordance to these elements, the Department should revise, concretize and discuss in depth its Quality Assurance Policy, its main KPIs and the ways to achieve them.
- R2.1 It is recommended that the program of studies use the ECTS system in its design. This will result in a program that would more accurately reflect the expected work load to the individual students.

- R2.2 It is recommended that prerequisite chains be established so students are aware of the previous knowledge and skills that are required for the successful completion of a course. In case that establishing prerequisite chains proves practically impossible, the 9 course limit should be lowered to a number that represents not more than one semester's worth of courses.
- R5.1 It is recommended that the Department establish procedures for professional development activities for teaching and learning, establish a teaching and learning support unit ideally at the University level, and promote educational innovation projects and awards.
- R4.1 It is recommended that the Department apply the Diploma Supplement regulation as soon as possible.
- R6.1 It is recommended that the Department reconsider the configuration of classrooms and teaching laboratories and consider reassignment of the use of space in order to make them more student-centered friendly.

### **Group 2 Recommendations**

- R2.3 It is recommended that an External Advisory Board be established to provide feedback on the structure orientation and content of the program from a strictly advisory point of view. Such a Board might include external stakeholders for example academics from other related programs within or outside UoI, former graduates of the program, and representatives of the local government or local industry.
- R2.4 It is recommended that the study programme should encompass the concept of engineering design as a superset of the individual competences acquired by its graduates. The study programme should include courses that give the opportunity to students to familiarize and practice the design thinking process. It is advisable that such courses are spread throughout the curriculum (in some programs there is a design course every year) and culminate with a major capstone design project before graduation.
- R2.5 It is recommended that the Department should consider including in the current curriculum courses in transversal competences which are currently not adequately covered by the study programme.
- R3.1 Develop a more structured approach to flexible learning paths, through the role of Student Advisor and the establishment of specializations in the study programme.
- R3.2 Increase the use of multiple delivery modes and pedagogical approaches, and especially enrich activities of active learning, taking advantage of ICT platforms and tools. Consider flipped classroom, clickers, game-based platforms, group learning activities among others.
- R3.3 Learning outcomes should be specifically assessed in the evaluative tasks of each course.
- R3.4 Develop criteria and a rubric to assess the Diploma Thesis in conjunction to it being assigned a grade. Otherwise, adopt a Pass/Fail grading system for the Diploma Thesis.

- R3.5 Establish a formal and easily accessible channel for student complains and suggestions, e.g. through a web-based facility, in order to provide more ways of student involvement in the teaching and learning process. Encourage students to express their satisfaction and further analyze and apply eventual enhancements based on student feedback.
- R4.2 Encourage the student body to take advantage of the Student Advisor through perhaps targeted advertisement.
- R4.3 Analyze the causes of low student mobility and take appropriate actions to increase the percentage of outgoing and incoming Erasmus students.
- R4.4 Increase the average duration of practical training above the currently set (by the Ministry) limit of two months.
- R5.1. Institute the notion of “faculty mentors” and means of rewarding teaching excellence;
- R5.2 Institute peer evaluations as an additional means of evaluation of teaching performance.
- R5.3 Design a “teaching formula” to optimize allocation of teaching load in conjunction with research and funding efforts; and
- R5.4 Identify unique UoI strengths to increase mobility, and strengthen the integration of CSE teaching with hot multidisciplinary research topics.
- R6.2 Explore the possibility of centralizing classroom allocation across the campus.
- R7.2 It is recommended that the program attributes and course learning outcomes be measured and analyzed. As a first step, one needs to correspond the program attributes to the course learning outcomes.
- R8.2 Upgrade the website design to accommodate more graphics that is easier to access by CSE students, and all other stakeholders, including alumni, industry employers, and the public.
- R8.3 Include in the website the CSE’s mission and vision statement when available.
- R10.1 Actively involve external stakeholders and graduates in the follow up process after each accreditation cycle.
- R10.2 Indicate quantitative measures with respect to the degree of achievement of advances in the progress report, and associate this information with the establishment of goals.

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

The Principles where full compliance has been achieved are:

Principles 2, 5, 6, 7, 8, 10

The Principles where substantial compliance has been achieved are:

Principles 1, 3, 4, 9

The Principles where partial compliance has been achieved are:

NONE

The Principles where failure of compliance was identified are:

NONE

<b>Overall Judgement</b>	
Fully compliant	<b>X</b>
Substantially compliant	
Partially compliant	
Non-compliant	

<b>The Accreditation Panel agrees that this Programme leads to a Level 7 Qualification according to the National &amp; European Qualifications Network (Integrated Master)</b>	<b>YES</b>	<b>NO</b>
	<b>X</b>	

**The members of the Accreditation Panel for the Undergraduate Programme  
Computer Science and Engineering (integrated master) of the University of  
Ioannina**

Name and Surname

Signature

- **Prof. Nikitas Dimopoulos (Chair)**, University of Victoria,  
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- **Prof. Yannis Dimitriadis**, University of Valladolid,  
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- **Prof. Georgios Giannakis**, University of Minnesota,  
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