



ΕΛΛΗΝΙΚΗ ΔΗΜΟΚΡΑΤΙΑ
HELLENIC REPUBLIC



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Ανώτατης Εκπαίδευσης**
Hellenic Authority
for Higher Education

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Accreditation Report
for the Undergraduate Study Programme
(Integrated Master) of:

Electrical and Computer Engineering
Institution: National Technical University of Athens (NTUA)
Date: 27 February 2021

Report of the Panel appointed by the HAHE to undertake the review of the Undergraduate Study Programme (Integrated Master) of **Electrical and Computer Engineering** of the **National Technical University of Athens** for the purposes of granting accreditation.

Abbreviations

ECTS	European Credit Transfer and Accumulation System
EEAP	External Evaluation & Accreditation Panel
EHEA	European Higher Education Area
ENQA	European Association for Quality Assurance in Higher Education
ESG	Standards and Guidelines for Quality Assurance in the European Higher Education Area
EUA	European University Association
GSRT	General Secretariat of Research and Technology
GDPR	General Data Protection Regulation
HQA	Hellenic Quality Assurance & Accreditation Agency in Higher Education
HAHE	Hellenic Authority for Higher Education
HEIs	Higher Education Institutions
IM	Integrated Master
IQAS	Internal Quality Assurance System
ISO	International Organization for Standardization
KPIs	Key Performance Indicators
MODIP	Quality Assurance Unit
MOOCS	Massive On-line Open Courses
NISQA (ΟΠΕΣΠ)	National Information System for Quality Assurance in Higher Education
OMEA	Internal Evaluation Groups/School's Internal Evaluation Committee
QAU	Quality Assurance Unit
QA / QI	Quality Assurance / Quality Indices
ΑΔΙΠ	Αρχή Διασφάλισης και Πιστοποίησης της Ποιότητας στην Ανώτατη Εκπαίδευση
ΑΕΙ	Ανώτατο Εκπαιδευτικό Ίδρυμα
ΔΑΣΤΑ	Δομή Απασχόλησης και Σταδιοδρομίας
ΔΕΠ	Διδακτικό Ερευνητικό Προσωπικό
ΕΕ	Ευρωπαϊκή Ένωση
ΕΕΑΠ	Επιτροπή Εξωτερικής Αξιολόγησης & Πιστοποίησης
ΕΕΔΙΠ	Ειδικό και Εργαστηριακό Διδακτικό Προσωπικό
ΕΘΑΑΕ	Εθνική Αρχή Ανώτατης Εκπαίδευσης
ΕΛΚΕ/ΕΛΚΕ	Ειδικός Λογαριασμός Κονδυλίων Έρευνας
ΕΛΣΤΑΤ	Ελληνική Στατιστική Αρχή

ΕΣΔΠ	Εσωτερικό Σύστημα Διασφάλισης Ποιότητας
ΕΣΠΑ	Εταιρικό Σύμφωνο για το Πλαίσιο Ανάπτυξης
ΕΤΕΠ	Ειδικό Τεχνικό Εργαστηριακό Προσωπικό
ΕΦΕΕ	Εθνική Φοιτητική Ένωση Ελλάδας
ΕΧΑΕ	Ευρωπαϊκός Χώρος Ανώτατης Εκπαίδευσης
ΜΟΔΙΠ	Μονάδα Διασφάλισης Ποιότητας
ΟΜΕΑ	Ομάδα Εσωτερικής Αξιολόγησης
ΟΠΕΣΠ	Ολοκληρωμένο Πληροφοριακό Εθνικό Σύστημα Ποιότητας
ΠΔΣ	Πρόγραμμα Διδακτορικών Σπουδών
ΠΜΣ	Πρόγραμμα Μεταπτυχιακών Σπουδών
ΠΠΣ	Πρόγραμμα Προπτυχιακών Σπουδών
ΠΣ	Πρόγραμμα Σπουδών
ΤΕΙ	Τεχνολογικό Εκπαιδευτικό Ίδρυμα
ΥΠΑΙΘ	Υπουργείο Παιδείας και Θρησκευμάτων
ΕΔΙΠ	Εργαστηριακό Διδακτικό Προσωπικό
ΕΕΠ	Ειδικό Εκπαιδευτικό Προσωπικό
ΕΤΕΠ	Ειδικό Τεχνικό Εργαστηριακό Προσωπικό

TABLE OF CONTENTS

Part A: Background and Context of the Review	6
I. The External Evaluation & Accreditation Panel.....	6
II. Review Procedure and Documentation	7
III. Study Programme Profile	9
Part B: Compliance with the Principles	10
Principle 1: Academic Unit Policy for Quality Assurance.....	10
Principle 2: Design and Approval of Programmes	12
Principle 3: Student- centred Learning, Teaching and Assessment.....	14
Principle 4: Student Admission, Progression, Recognition and Certification	17
Principle 5: Teaching Staff	20
Principle 6: Learning Resources and Student Support	23
Principle 7: Information Management	25
Principle 8: Public Information	27
Principle 9: On-going Monitoring and Periodic Internal Review of Programmes	28
Principle 10: Regular External Evaluation of Undergraduate Programmes.....	30
Part C: Conclusions	32
I. Features of Good Practice	32
II. Areas of Weakness	32
III. Recommendations for Follow-up Actions	33
IV. Summary & Overall Assessment	34

PART A: BACKGROUND AND CONTEXT OF THE REVIEW

I. The External Evaluation & Accreditation Panel

The Panel responsible for the Accreditation Review of the Undergraduate Study Programme (Integrated Master) of **Electrical and Computer Engineering** of the **National Technical University of Athens** comprised the following five (5) members, drawn from the HAHE Register, in accordance with Laws 4009/2011 & 4653/2020:

- 1. Dr. Kimon P. Valavanis, Professor (Chair)**
University of Denver, USA

- 2. Dr. Mihalis Yannakakis, Professor**
Columbia University, USA

- 3. Dr. Ioannis Kymissis, Professor**
Columbia University, USA

- 4. Dr. Dimitrios Nikolopoulos, Professor**
Virginia Tech, USA

- 5. Mr. Panagiotis Kiskiras**
Member of the Technical Chamber of Greece, Greece

II. Review Procedure and Documentation

The Hellenic Authority for Higher Education (HAHE) formed the External Evaluation and Accreditation Panel (EEAP) of experts to evaluate the programme of the School of Electrical and Computer Engineering (Σχολή Ηλεκτρολόγων Μηχανικών και Μηχανικών Υπολογιστών, ΣΗΜΜΥ) of the National Technical University of Athens (NTUA) in accordance with the HAHE requirements. The evaluation and assessment were conducted remotely via Zoom. The method used was based on sampling of the School's activities with the aim to evaluate the overall mission and objectives of the programme and to comment on its compliance, effectiveness, efficiency, and applicability with respect to the chosen requirements.

The review procedure and documentation were carried out during the week of February 22 to February 27, 2021.

During all meetings valuable information was received regarding the programme structure, delivery methods, programme improvements and modernization compared to findings from the previous external evaluation, which included a review of the undergraduate programme, the quality of the students and of the educational programmes, points of strength, as well as the shortcomings that need to be addressed.

On February 22, 2021:

The EEAP members met via teleconference, reviewed, and discussed all received information and the guidelines of HAHE as well as the logistics associated with the compilation of the report. The EEAP members distributed the tasks among themselves based on the accreditation template.

On February 23, 2021:

The EEAP members met via teleconference with the Vice-Rector, the Dean of the School, the ICCS-ECE Director, the President of MODIP, the Head of the ECE School, as well as with representatives of MODIP, MODIP staff, and OMEA who gave informative presentations related to the status of the University and the School. Presentations were followed by discussion and a Q&A (question and answer) session. Then, the EEAP members met (teleconference) with teaching staff members and discussed the programme of study, infrastructure support, and other resources.

On February 24, 2021:

The EEAP members met (teleconference) with ECE undergraduate students, and they were given virtual tours of the facilities, followed by discussions with administrative staff members and teaching staff members. Then, the EEAP met with programme graduates.

On February 25, 2021:

The EEAP met with employers and social partners, OMEA and MODIP representatives followed by exit meetings with OMEA and MODIP representatives to clarify any remaining issues and to respond to any questions the Panel had. Subsequently, the meeting concluded with a teleconference with the Vice-Rector, The Vice Rector of Administrative, Academic and Student Affairs, the President of MODIP, the Dean of the School of ECE, the Head of the School, OMEA

and MODIP members, during which the Panel discussed their first findings and communicated their overall positive impression.

On February 26 and 27, 2021:

The EEAP members worked to complete the accreditation / evaluation report.

III. Study Programme Profile

The programme under evaluation is administered by the School of Electrical and Computer Engineering, or in Greek, Σχολή Ηλεκτρολόγων Μηχανικών και Μηχανικών Υπολογιστών (ΣΗΜΜΥ). The most recent curriculum restructure took place during the 2014-15 year, taking into consideration the findings of the 2012/13 evaluation, student feedback, annual evaluations based on statistical data and interactions with other stakeholders. The curriculum is consistent with the objectives and requirements set by the School and the overall mission of NTUA.

During the most recent curriculum restructure, the number of courses required for graduation was reduced to 55 (from 65 initially, then 60), which represents (roughly) 15% reduction in courses over the initial programme.

The curriculum spans a five-year, ten-semester programme, course-heavy but diverse, which also includes laboratory training, project work, a diploma thesis, and a very well structured and administered practical training at the end of the eighth semester. The number of students involved in practical training (non-mandatory) depends on the available open seats every year, however, there is increasing interest on behalf of the students, who apply, and they are chosen by a committee.

The School includes four main area sectors (divisions, τομείς), namely Communications (Επικοινωνίες), Computer Science (Πληροφορική), Systems and Electronics (Ηλεκτρονική και Συστήματα) and Energy (Ενέργεια), which are further divided in twelve (12) in-depth specializations (ροές).

The undergraduate curriculum structure includes: (i) The core programme (κορμός) that spans five semesters (1-5), it includes 30 courses, and it is common to all students. (ii) The sector and in-depth specialization (τομείς και ροές) that spans four semesters (6-9) and includes 23 section related courses and 2 core courses, for a total of 25 courses. (iii) The diploma thesis (Διπλωματική Εργασία) that is completed during the 10th semester. Thus, there is a total of 32 core courses, mandatory to all students, and 23 specialization courses.

The School has established a well-structured algorithm for students to choose courses from the main area and the in-depth specializations, also allowing for courses from different in-depth specializations. As such, a student may have a major and minors during the curriculum. Collectively, courses cover a very wide range of topics from fundamental courses to more advanced elective courses. The curriculum is very diversified, extensive, and broad, yet, still, very course intensive.

The EEAP believes that the curriculum objectives must continue to be evaluated to allow for faster and more flexible restructuring of existing courses.

The programme graduates the top of the top engineers who are readily and steadily employed within and outside Greece. Interviewed employers and external partners stated that 'ECE-NTUA graduates are guaranteed a job interview once they apply', while employers outside Greece (international companies, including major ones like Tesla) stated that ECE-NTUA graduates are top worldwide!

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 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

NTUA has established a Quality Assurance (QA) Policy for the undergraduate programmes, along with an Internal Quality Assurance System (IQAS, in Greek ΕΣΔΠ) that follows specified guidelines set by HAHE. MODIP (ΜΟΔΙΠ), which is the Quality Assurance Unit for the University, defines, reviews, and evaluates regularly pertinent procedures, redesigns and redefines QA objectives, and has established a comprehensive process that enables and allows for continuous improvement of institutional quality and strategy.

MODIP includes a representative from the ECE School, and its actions depend on NTUA central policies. Coordination between the Internal Evaluation Group (OMEA) and MODIP occurs through the exchange of data that are used to subsequently recommend actions in response to

identified issues, as well as, on feedback used to measure success of interventions. MODIP has procedures in place to ensure continuity of the QA process.

Discussions and interviews with MODIP, ECE members and the Vice Rector have revealed that commitment and evaluation of quality within the School is top priority throughout the academic hierarchy. The Quality Assurance Policy is communicated to all parties involved, from faculty members, students, public authorities, and third parties. Internal reviews are conducted to evaluate the QIs with respect to their effectiveness, efficiency, appropriateness, applicability, flexibility, measurement, as well as to their changes and rate of change. ECE invests considerable time in evaluating set QIs with the aim to accurately depict the programme's effectiveness and competitiveness. It is noted that the number of incoming students is decided by the Ministry of Education, which may limit the flexibility of some relevant QIs. However, overall, the QA policy and QIs are comprehensive and under continuous consideration for improvement.

The EEAP states that the collegiality and support among the faculty members and interaction with students is outstanding (not even comparable to 2012/13), and this contributes to the overall quality and to a very healthy work environment despite the challenges and 'systemic issues', which the School tries to solve on their own without support from the State.

Although, the most important issue that all participants pointed is the underfunding from the State, all involved in ECE have managed the almost impossible: they have a top programme. All stakeholders have pointed to the need for additional permanent staff in order to maintain the provided high-level education and continue the improvement of institutional quality and strategy.

Panel Judgement

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

Panel Recommendations

- It is recommended that NTUA in general and the School in particular, insist on establishing the 'teaching assistant' for each course such that instructors are not so overloaded.
- It is recommended to, somehow, provide more funding to improve academic human resources, which, in turn will contribute to sustaining the high-quality standards adopted by ECE.
- It is recommended to strengthen the current alumni network and enhance correspondence to receive regular input/feedback, which will play a key role towards improving the QA process of ECE.

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 most recently updated study programme has been designed based on well-defined objectives and standards.

The 2014/15 redesign of the curriculum has overcome several of the many restrictions and constraints imposed in the previous programme and complies with set quality and accreditation standards. The redesign has led to less courses and to some relaxation of prior restrictions without affecting thematic sequences of courses.

The curriculum when compared with universally accepted standards for the specific area of study, fulfils such standards and provides notable breadth in the lower division curriculum, strong fundamentals, and opportunities for specialization and multi-specialization during the last two years.

The structure of the study programme is rational and very clearly articulated.

There is a yearly assessment of the educational outcomes, a yearly internal evaluation, and a periodic external evaluation. Note that periodic review and revisions should be a continuous

process with multiple feedback loops to allow for programme modernization without disruption of the student requirements towards graduation.

The curriculum revision procedures involve consultation of stakeholders, external experts, students, and graduates. However, it is unclear if alumni (graduates) and external experts are formally involved or invited to serve as members of the respective committees. If not, it would be wise to do so, and to invite especially alumni as members of the revision committee. Curriculum revision may entail not only courses offered but also additional “tools” such as seminars, short courses, tutorials, invited lectures, etc.

The student guide is complete and thorough, but not concise, nor is it sufficiently exciting. It would be great to involve student organizations (i.e., IEEE, BEST) to engage in writing the student guide, including more guidance of the type “*These are the X different career paths you can take, and here is how you get there*”. It will be better to enrich the guide with more pictures of student projects, competitions, perhaps alumni stories, a section about “*Where do our graduates go?*”, a section about graduate studies in Greece and abroad, etc.

Panel Judgement

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

The External Evaluation & Accreditation Panel agrees that this Programme leads to a Level 7 Qualification according to the National & European Qualifications Network (Integrated Master)	YES	NO*
	X	

Panel Recommendations

- It is recommended that new redesigns consider offering regular seminars or short courses or even introduce courses related to entrepreneurship, tech to market, technical writing, soft skills, etc. This feedback was provided to the Panel by graduates, alumni, and employers.
- It is recommended to put even more emphasis on project based, team-oriented and interdisciplinary courses but not at the expense of basic, fundamental, theoretical coursework.
- There is still need for a balanced curriculum with the introduction of courses/seminars/workshops on new and emerging technologies.

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 programme centers on fundamental theoretical, applied theoretical and technical education. The programme includes a core component of five semesters common to all students, a main specialization, and in-depth specialization(s) of four semesters and a Diploma thesis during the tenth semester. In addition, students are given the opportunity to complete a practical training component that is very well-structured after the eighth semester (during the summer). The curriculum includes lectures, projects, homework, exams, laboratory sessions, coursework, and the mandatory Diploma Thesis. The School has a well-established electronic database where students find detailed information about the programme, all courses and course material.

The programme of study spans five years. However, students may graduate in 5.0 but also in 9.0 years depending on the admission year. The average time to graduation is high, although there may be several explanations for this. The new law and legislation for higher education that was recently ratified by the Greek Parliament may contribute to reducing the time to graduation.

The core programme that is mandatory for all students, by design, is rather inflexible, but provides a wealth of breadth information that, at the end, makes graduates very marketable. The two-year specialization component allows for very limited flexibility in course selection as it centers on specialization-specific thematic sequences of courses.

The programme is overall rigid; however, it allows for students to develop skills to cope with the rigorousness of the programme.

The teaching process is thorough and comprehensive. There is a QA policy in place that is followed and owned by all parties involved, there are QIs that are evaluated and measured every year, some of which are specific to the needs of the School. There is solid and very healthy interaction among faculty, faculty-staff and among faculty-staff-students and this healthy environment facilitates better learning. Students speak highly of their instructors who are available even during these challenging times due to the pandemic.

There is a plethora of course delivery methods that includes traditional /conventional, electronic, and multi-media tools and support technologies. In addition, course passing requirements are not limited to a final exam only, but may include a combination of exams, projects, labs, homework, special projects, etc. However, the infrastructure for information technologies to deliver lectures requires continuous improvement, along with creating smart and flipped classrooms with the ability for online use of course support technologies.

The situation in laboratory teaching has similar challenges. There is insufficient number of laboratory staff, the laboratory infrastructure for educational purposes is at risk of becoming technologically obsolete in a field of rapid technological change. This negatively affects the quality of education that the students receive. The Panel strongly recommends that the School not only hires more laboratory staff but also receives significant resources from the State and industry for modernizing laboratory equipment in cutting edge courses that are critical to the curriculum.

The School has a course and instructor evaluation process in place. The percentage (%) of student involvement and participation must increase, though.

It is not clear if there is an appeal process in place, and if there is one, whether it is well-communicated to the students.

The Panel has understood from their meetings with students that students are satisfied with their instructors; they speak highly of them and they have regular correspondence with them.

The building infrastructure seems to be sufficient for the time being, however, it could and should be better and more modern (this cannot be solved by the School). Lab space is challenging, and lab requirements are difficult to meet because of the number of students. However, this limitation is overcome by extra lab sessions that are scheduled by the instructors themselves, such that students cover what is required in each course. This systemic problem

needs to be resolved via new faculty hires, ETEP, EEP and EDIP members, and funding to create more labs and better lab infrastructure, and more space.

The library facilities (NTUA and School) are sufficient and cover all needs, however library funding should increase. Regardless, staff is enthusiastic about their work, and faculty and students manage to sustain an effective learning experience.

Panel Judgement

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

Panel Recommendations

- The School needs autonomy and authority to define/determine the number of new students to be enrolled each year.
- New faculty lines are immediately needed. The School had 88 faculty lines in 2011, 58 in 2021 and the projection is that it will have about 34 around 2025. 'Empty' faculty lines from mandatory retirement are not given back to the School from the State, which is not acceptable. The student to faculty ratio has jumped from (the unacceptably high ratio) 46 in 2011 to above 92 (unheard off by any standards) in 2021. Both trends must be immediately reversed if NTUA/ECE wants to continue the excellent path they have designed for themselves.
- New faculty members will contribute to smaller class size, thus, better interaction between students and instructor.
- New staff and support members will contribute to sustainability and improvement of the status within ECE.

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 Schools 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 School admits 250 students annually through the nationwide matriculation examination system. These are top quality students who excel in the national exams and select the ECE as their first preference. However, ECE also admits about 250 more students through various transfer schemes regulated by the Greek Ministry of Education. NTUA/ECE is required by law to admit those transfer students and has no control over their background and preparation for studies.

The overall student body is very large. This creates several challenges in terms student progression. There is significant diversity in student backgrounds and abilities. More than 55% of the enrolled students are students past their fifth year of studies and the average graduation time approaches eight years! Over 2,500 enrolled students appear to be disengaged from their studies, but they remain registered in courses and can repeatedly take course exams. Some courses in ECE have over 1,000 enrolled students with high student failure rates.

ECE has many courses and course pathways for students to choose from. Students sometimes find it challenging to navigate through this curriculum and make the choices that are right for them.

ECE does not have a pre-requisite course structure. ECE enforces progression between core courses taken in the first five semesters and elective courses taken later. Furthermore, ECE has undertaken efforts to minimize overlap between courses and to establish a natural sequence of incremental knowledge and skills acquisition in the courses within the same in-depth specialization. However, the curriculum structure remains complex and may not necessarily help students easily identify topics where they want to focus and enhance their knowledge. This is mitigated by ECE's faculty members, who help students understand and navigate the curriculum.

The lack of prerequisites and a formal progression monitoring system creates chasms in student quality, performance, and progress towards graduation. Many students disengage and appear to fall behind. Others struggle to navigate the curriculum and select appropriate thematic sequences of courses. Some excellent students cannot benefit from accelerated progression, for example by taking elective courses earlier during their studies.

ECE offers several informal opportunities to first-year students to familiarize themselves with the curriculum, laboratories and facilities, and the overall environment and culture. This is done primarily via information and social events organized by ECE for entering first-year students. There seems to be additional informal mentoring of students by faculty. However, this appears to happen in an ad-hoc basis and mostly when students decide to join a research lab. The School is yet to implement a formal scheme of undergraduate student advising and mentoring. This is realistically hard because of the sheer number of students in the School and the poor student to faculty ratio. However, given the major challenges that ECE is facing with student progression and graduation, a formal advising and mentoring scheme appears to be necessary.

The School maintains a high-quality standard for the final-year Diploma thesis of students. Many students undertake the thesis while working in one of the research laboratories and under the auspices of funded research projects that run in these laboratories. The laboratories are able to provide excellent research experience for undergraduate students, many of which join laboratories early in their studies (e.g., in their second or third year) and continue to work on the research that underpins their thesis after completion of the thesis. Diploma theses often lead to publications in reputable venues and students value the opportunity to do research as part of their thesis immensely.

ECE maintains many active partnerships and collaborations with European Universities. Students can attend courses in partner Universities through the Erasmus programme. Students also have opportunities for collaborations with international research groups through their engagement in the School's laboratories. In terms of further mobility opportunities, students participate in a wide range of international competitions (e.g., programming contests, mathematics competitions, autonomous and electric vehicle competitions, robotics competitions). The School supports the students participating in these competitions through mentoring, training, and external sponsorships. The students exhibit strong performance in these competitions and receive international acclaim.

ECE applies the ECTS model across the curriculum.

ECE has a formal appeals process, where students can appeal for any aspect of the educational and administrative services offered by the School. These appeals are handled promptly and effectively by the Dean, the faculty and if necessary, by the institution.

The School has successfully implemented a formal practical training process. Many students (currently between 80 and 100 per year) benefit from this opportunity, because of the wide network of government and corporate partners that the School is collaborating with in research and knowledge transfer activities. Practical training of students is now an integral part of ECE's curriculum and a valuable component of the student learning experience. The School organizes a prolific range of career-related events where industry representatives and corporate partners have an opportunity to engage with the students.

ECE clearly meets all State requirements for awarding Diplomas in Electrical and Computer Engineering and the undergraduate curriculum fully meets the standards of an integrated Masters. School graduates meet the requirements of Level 7 of the European Qualifications Framework, which is equivalent to Masters degrees in the UK and Germany, among other countries.

Panel Judgement

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

Panel Recommendations

The Panel fully recognizes that faculty and staff face a high workload to deliver the educational mission of the School to a large student body of over 6,000 undergraduate and graduate students, while maintaining a high standard in research and professional service. The following recommendations are contingent on ECE receiving the necessary additional personnel and funding to support the recommended activities.

- The Panel recommends that ECE establishes a formal academic advising scheme for students. The curriculum remains complex with many pathways and options that students need to understand and navigate to be successful. Students need detailed guidance to select courses that build the necessary breadth and depth in the subjects of study ECE offers.
- The Panel recommends that ECE adopts formal progression rules and guidelines for students. This can be implemented either as a scheme of enforced prerequisites for course enrolment or at least as detailed guidelines that describe the necessary background knowledge for each course in the curriculum and are communicated clearly to students before enrolment. While a progression scheme between core and elective courses is in place, a more fine-grain, formal scheme will help students prioritize their subjects of study and naturally progress through the curriculum. Such a scheme may also help ECE reduce course failure rates.
- An automated system that checks for prerequisite compliance must be put in place.

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

There is a clear, transparent, and publicly recognized process for the recruitment of faculty and staff, which is primarily governed by the constraints of Greek law and arrangements with the unions that negotiate conditions of employment. These conditions and processes are set by the Ministry of Education, which controls both the number of available lines and the budgets and negotiations for the process. The Ministry of Education also manages the promotion process, which is nationally harmonized. This process is based on well-established principles of evaluation for academic excellence in scholarship, teaching, and service.

In the recent period, the recruitment of permanent faculty and staff have been severely curtailed (staff hiring is limited and faculty size has been radically reduced), so the effectiveness of processes for recruiting, and particularly, retention of new staff is challenging to assess. There is a general expectation of a continuing reduction in the faculty size based on retirements expected over the next few years, and concern that few or no replacement or additional lines will be authorized soon.

The major support for professional development is through the research institute ICCS. Research programmes the faculty participate in provide the integration between teaching and research, and support much of the facilities, equipment, and technical staff within the University. The University especially encourages participation in research and encourages faculty to propose and execute programmes through the institute.

Opportunities for professional development include mobility, national and international conference participation, and invitation of outside experts for seminars and workshops. Foreign conference attendance is supported primarily by participation in these programmes. Faculty mobility arrangements are coordinated through the EU Erasmus programme, but financial support needs to be externally secured for any inbound or outbound visits.

With respect to increasing the quality and volume of research, the University carefully tracks the productivity of each faculty member with respect to quantifiable metrics. There is a distribution in the range of activity among the faculty in ECE, but the general level of research productivity and visibility is quite high. More than 23 members of the School, for example, are currently listed in the top 2% of cited authors worldwide.

There is significant evidence of innovation in teaching within the School, both before the pandemic and in response to the conversion to remote/hybrid teaching in the pandemic period. Prior to the pandemic, ECE had undertaken a comprehensive improvement in course delivery and online learning, with a significant improvement in the digital tools and delivery of courses through customization of the school’s digital course management tools (especially MyCourses). The development and use of these tools were well reviewed by the students.

This effort especially paid off when the pandemic closed teaching and laboratory spaces. The tools to deliver hybrid courses were already developed and deployed, ready for use albeit with more intensity. Faculty creativity to continue to deliver quality instruction was also applied – take home lab kits were assembled and deployed (and funded!) for some circuit classes which would otherwise require a lab, the use of automated testing and delivery (e.g., for algorithms) was expanded, and faculty put in overtime to accommodate the new modalities and demands.

The recruitment / retention of women faculty is noted as a challenge of the programme; the proportion of women faculty (~7%) does not reflect the population in the student body (~25%) or general population. Without additional recruiting it is not clear that any initiatives to redress this situation can be effectively implemented.

There is a very extensive tracking of faculty metrics, course delivery, etc., which is tracked through the quality audit prepared annually by the School.

Panel Judgement

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

Panel Recommendations

- The Panel recommends that a sustainable and predictable plan for faculty-level staffing be delivered to the School. The lack of instructional staff at all levels suitable to the teaching demands for the School is a core concern of the programme. A significant increase in staff to harmonize the student/faculty ratio with international norms would significantly benefit the School and relieve the excess workload.

- Additional recruiting is required to recruit new qualified faculty, provide coverage of new areas of development, and to provide the opportunity to harmonize the gender balance in the School.
- The lack of compensated junior/peer teaching support (e.g., through teaching assistant or lab supervisor mechanisms) is a missed opportunity to leverage the graduate student body to help instruct the undergraduate and MS-level students at a low net cost and with development benefits for the instructing students (especially those interested in a career in academia). The Panel recommends exploring options for supporting MS or PhD-level students for course instruction, grading, and lab delivery assistance.
- The School is encouraged to develop collectively a five-year strategic plan, which will guide hiring within and across sectors as well as consider the impact on the curriculum.

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 School facilities have partially improved over the years, despite lack of funding. The Panel recognizes efforts made by the University and the School to allocate research-oriented funding towards infrastructure improvement, but this is limited. Lab facilities need to be modernized. Lack of government funding impacts modernization. The School has made and makes every possible effort to provide support facilities to students, and the collegiality among its members pays dividends. Non-educational facilities are limited and mostly understaffed.

The administrative staff is very professional, overworked, and underpaid.

Unless there is substantial investment from the State, the School risks being not fully compliant in the future.

Panel Judgement

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

Panel Recommendations

- Additional and substantial funding is required to improve infrastructure.

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 School has developed a comprehensive digital platform that services its educational programme. The platform includes all information on the courses offered, their schedules each semester and their instructors. Grades are uploaded electronically and become readily accessible to the students. Statistical information is derived automatically on various metrics such as teaching load, student participation in the courses, distribution among the different tracks, etc. The platform serves the School well in providing readily a comprehensive view of the educational activities.

Information is collected and tracked on several key indicators for the student population, e.g., their choices of track, their progress through the programme, participation in practical training, etc. Feedback from the students on the courses is obtained through course evaluation forms that are then systematically analysed.

Detailed information is also maintained on the research activities of the faculty. This includes grants and funds raised by the faculty through research programmes, number of publications in journals and conferences, number of citations, etc.

The School documentation provided to the Panel contains several tables and graphs summarizing information on the courses, the students, the faculty, and the teaching and

research activities carried out in the School. They give a nice comprehensive overview of the School and its activities. It shows, for example, how student participation in the different sectors has evolved over time. It illustrates the significant level and high quality of research activity of the faculty, and that this is true for all the sectors.

The information systems developed by the School help facilitate the smooth operation of the School. Furthermore, the collected information on the different education and research activities are essential in assessing the current state, identifying needs, and future planning.

Panel Judgement

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

Panel Recommendations

- Continue to evolve the services platform and the information collection systems to address the School needs as they arise and use the information to continue improving the processes.
- It may be useful to develop an information system to track School alumni, to help connect with them and foster interaction between alumni, students and faculty.

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

ECE has a simple, efficient, modern and comprehensive website. It has both Greek and English versions but there is disparity between the two regarding the information that is displayed in each one. Also, the website does not have a distinct link for the institutional Quality Policy and its objectives. MODIP is one of these sections but is included only in the Greek language version of the website. Key information regarding ECE, the study programme and all course outlines are available online and easily accessible from the ECE's web. All published information is current, up-to-date, and clear.

Panel Judgement

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

Panel Recommendations

- The ECE web presence is comprehensive and functional. An improvement in the correspondence of material content between the Greek and English language versions of the website and the exposure of the MODIP functions and activity are recommended.
- Giving the School's landing page a more modern feel, with a few impactful visuals, showcasing recent success stories, labs, student and faculty distinctions and awards would add to an already substantial online presence.

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 QA system of the University addresses this principle thoroughly.

There is an extensive data collection infrastructure in place for objective analysis of quantitative metrics along with qualitative assessment based on surveys of the students and staff. This collection of quality indicators includes data on enrolment, grades, course, and exam attempts, teaching load, faculty performance metrics, and other useful statistics. It is reported annually in a comprehensive report for review and analysis by the administration. Several years of this report were furnished as evidence of compliance of this criterion.

The faculty collect feedback on the programme content through a range of sources. These include feedback from direct interactions with external researchers and practitioners, by monitoring changes made to programmes at other universities, and the release of new textbooks. The faculty are actively in contact with many external industrial and academic groups and have a high level of interaction through which to obtain this feedback. Employers are generally very satisfied with the preparation of the students and feel that the programme provides an exceptionally strong foundational preparation for industrial practice. The Panel's interviews with employers confirmed this high level of interaction and alignment of the programme with their needs.

Changes to courses and the programme are evaluated and proposed through a formal process and is approved through the Committee for Undergraduate Studies. Faculty can propose new courses, curricular changes, and the elimination or combination of courses through this mechanism.

Student workload is monitored primarily through course surveys and student self-reports in course evaluations.

Student assessment in courses is well structured. The School has adopted a student-centered learning and teaching practice, which follows a modern model of course performance and student assessment. Grades are based on a diversity of metrics taken along the progress of the course offering and are usually not exclusively determined by the final exam. Several example rubrics used in courses were provided to further elaborate this approach.

Student expectations, needs, and workload are collected both informally and through surveys that are distributed as part of each course. One challenge is the low response rate for course surveys, around 4%. Students are aware of these end-of-course surveys, but in discussion offered their opinion that informal discussion with the instructors on course quality/workload/etc. was the most effective method of offering feedback. Many instructors also offer their own mid-term assessments to improve course quality, which makes the formal post-course assessment duplicative.

Panel Judgement

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

Panel Recommendations

- Logged student responses to course surveys could stand to be improved; this is a challenge both for evaluating faculty as well as providing feedback on courses. One of the challenges discussed was that formal surveys are offered only at the end of the course which is too late to improve a course (this is seen by the students as the only function of the surveys and motivation to complete them). Some faculty successfully offer mid-term surveys; offering a mid-term logged assessment could help improve this response and memorialize this feedback.
- The communication office was universally commended for its outstanding interaction with local industry; expansion of this office and further engagement with the alumni network could strengthen many of the student interactions and provide avenues for more feedback on these principles.
- The School could also consider convening a formal industrial advisory board to offer more regular/structured feedback on the programme. Several of the alumni and industrial partners interviewed as part of this exercise expressed interest in further engagement of this type.

Principle 10: Regular External Evaluation of Undergraduate Programmes

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

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

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

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

Study Programme Compliance

The School went through external evaluation in 2012/13. The findings of the evaluation committee at that time led to the programme restructure starting in 2014-15. The School has provided evidence of what has happened since 2014/15, which, overall demonstrates a remarkable progress.

Faculty, support staff and administrative personnel are very aware of the importance of the external evaluation and have done their best to comply with the whole process. All involved parties are helpful and willing to help.

There is some evidence that external stakeholders and employers are consulted for programme modifications, but there is no industrial advisory board (IAB) or any other formal interaction to make this correspondence more efficient.

Panel Judgement

Principle 10: Regular External Evaluation of Undergraduate Programme	
Fully compliant	X
Substantially compliant	
Partially compliant	
Non-compliant	

Panel Recommendations

- The external evaluation process must be a regularly recurring event, once every five or six years, with a strict requirement to address and start implementing recommendations within one year.

PART C: CONCLUSIONS

I. Features of Good Practice

- The committee Panel acknowledges the efforts and hard work since 2012/13, the progress is evident, the curriculum is more streamlined and more flexible. It is very rare to see such a stellar School despite the challenges and regulations imposed by the State.
- There is no question that the School has done a remarkable job with the programme restructure of 2014-15. The curriculum is updated and well-balanced. There is a clear five-year course organization structure covering semesters 1-5, 6-9, and 10. The number of courses has been reduced. Practical training has been instituted as part of the curriculum and it is a major advantage of the programme.
- The programme graduates top engineers who are readily and steadily employed within and outside Greece. Interviewed employers and external partners consider NTUA-ECE graduates as top, worldwide.
- There is a fully functional and outstanding electronic system in place for all course and other informational items required.
- The School has a very informative web presence with detailed information on academic activities, student support services, the curriculum, the faculty and their research, and its quality assurance policy, targets, and metrics. The School's web presence is comprehensive and functional.
- The University and the School have outstanding self-evaluation processes that guarantee quality assurance. A comprehensive set of QIs has been established. Both the QAU and MODIP receive and analyse data to continuously improve programmes and deliverables.
- There is a plethora of course delivery methods that includes traditional /conventional, electronic, and multi-media tools and support technologies. However, the infrastructure for information technologies to deliver lectures requires continuous improvement, along with creating smart and flipped classrooms with the ability for online use of course support technologies.
- There is solid and excellent, and healthy interaction among faculty, faculty-staff and among faculty-staff-students and this healthy environment facilitates better learning. Students speak highly of their instructors who are available even during these challenging times due to the pandemic.

There is no comparison between 2012/13 and 2021. The School has achieved excellence on all fronts despite systemic challenges – the challenge now is to sustain such excellence.

II. Areas of Weakness

It is noted that several concerns are due to 'systemic' problems outside the University. However, such weaknesses, long-term, may negatively impact the School. Such weaknesses are:

- Lack of substantial, annual, funding from the State to cover and support all educational needs.
- Lack of sufficient faculty members and support staff to cover all School needs.
- Unusually high number of incoming students every year.
- It is essential to, somehow, formally introduce the concept of 'Teaching Assistant' that will greatly facilitate course delivery and help instructors, who are overworked and underpaid.

Other recommendations / concerns relate to a more flexible curriculum with more electives, better engagement of alumni, graduates and other stakeholders in programme/curriculum improvements, establishing an alumni organization and making more appealing and inviting web designs.

III. Recommendations for Follow-up Actions

The Panel is extremely pleased with the School's activities and efforts to improve and modernize its curriculum. The student body is second to none. The Panel is truly impressed with the quality of the students who met with the Panel – their maturity, sophistication, technical depth, and creative spirit. The School is the top one in terms of student input/demand. The reputation of its students is worldwide known, and the quality, productivity and collegiality of its faculty and staff are the greatest assets of the School.

Faculty and staff are overworked and underpaid, and they deliver beyond expectations. Resources are unacceptably low, and State-imposed regulations and restrictions impact negatively further progress and advancement.

The Panel believes that the University as a whole and the School must be autonomous and independent to set up and follow their strategic plan(s).

It is a must to form an Industrial Advisory Board (IAB) to increase and improve interaction and feedback between the School, marketplace, and all external stakeholders.

The Panel recommends a formal and continuously updated mechanism to track the School's graduates and their professional advancement. Evidence shows that the graduates are very successful, worldwide. They should be given a chance to be involved with the School, in various capacities – including curriculum development, stewardship, and even sponsorship of various student-centric activities.

Another idea worth considering is to create a forum to showcase faculty and student accomplishments, activities, and awards. This will improve external visibility, allow for better and more interactions, increase student and faculty mobility, and further strengthen the School's reputation. Finally, the School should consider creating an annual School communications report, highlighting student success stories, faculty news and accolades, alumni news and accolades, patents, student team events, etc.

IV. Summary & Overall Assessment

The Principles where full compliance has been achieved are: 1,2,3,4,5,6,7,8,9 & 10

The Principles where substantial compliance has been achieved are: None

The Principles where partial compliance has been achieved are: None

The Principles where failure of compliance was identified are: None

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

The External Evaluation & Accreditation Panel agrees that this Programme leads to a Level 7 Qualification according to the National & European Qualifications Network (Integrated Master)	YES	NO
	X	

The members of the External Evaluation & Accreditation Panel

Name and Surname

Signature

- 1. *Dr. Kimon P. Valavanis, Professor (Chair)***
University of Denver, USA

- 2. *Dr. Mihalis Yannakakis, Professor***
Columbia University, USA

- 3. *Dr. Ioannis Kymissis, Professor***
Columbia University, USA

- 4. *Dr. Dimitrios Nikolopoulos, Professor***
Virginia Tech, USA

- 5. *Mr. Panagiotis Kiskiras***
Member, Technical Chamber of Greece, Greece