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HELLENIC REPUBLIC

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

Naval Architecture and Marine Engineering
Institution: National Technical University of Athens
Date: 3 April 2021

Ευρωπαϊκή Ένωση
Ευρωπαϊκό Κοινωνικό Ταμείο

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

ΕΣΠΑ 2014-2020

enqa.

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

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PART A: BACKGROUND AND CONTEXT OF THE REVIEW

I. The External Evaluation & Accreditation Panel

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

1. **Professor Miltiadis Papalexandris (Chair)**
   Université catholique de Louvain, Louvain-la-Neuve, Belgium

2. **Assoc. Professor Dimitrios Konovessis**
   Singapore Institute of Technology, Singapore

3. **Dr. George Maglaras**
   Hellenic Lloyd's S.A., Lloyd's Register Group, Athens, Greece

4. **Mr. Panagiotis Kiskiras**
   Member of the Technical Chamber of Greece, Athens, Greece

II. Review Procedure and Documentation

The External Evaluation & Accreditation review of the Study Programme of the School of **Naval Architecture and Marine Engineering** of the **National Technical University of Athens** took place between on March 29th and April 3rd , 2021. The review was virtual via the ZOOM platform due to the travel and gathering restrictions related to the covid-19 pandemic. The members of the External Evaluation and Accreditation Panel (EEAP) were: Mr. Panagiotis Kiskiras, Assoc. Prof. Dimitrios Konovessis, Dr. George Maglaras and Prof. Miltiadis Papalexandris (chair).

The EEAP received a number of documents from both the University and the Hellenic Authority for Higher Education (HAHE) in advance. The following documents were reviewed by the Panel prior to the first meeting:

B1. Πρόταση Ακαδημαϊκής Πιστοποίησης ΠΠΣ
B2. Πολιτική Ποιότητας ΠΠΣ
B3. Οδηγός Σπουδών
B4. Κανονισμός Προπτυχιακών Σπουδών ΝΜΜ ΕΜΠ και Πρακτικής Άσκησης
B5. Περιγράμματα μαθημάτων
B6. Στοχοθεσία Ποιότητας ΠΠΣ
B7. Υποδείγματα ερωτηματολογίων φοιτητών και αποτελέσματα επεξεργασίας τους
B8. Αποτελέσματα εσωτερικής αξιολόγησης του ΠΠΣ από τη ΜΟΔΙΠ.
B9. Δεδομένα ποιότητας από το Ολοκληρωμένο Πληροφοριακό Εθνικό Σύστημα Ποιότητας για τα ακαδ. έτη 2015-2016, 2016-2017, 2017-2018, 2018-2019 και ημερ. έτη 2016, 2017, 2018, 2019
B10. Συμπληρωματικό υλικό τεκμηρίωσης
B10i. ΕΜΠ και αγορά εργασίας
B10ii. Εισηγητική έκθεση επιτροπής στρατηγικής
B10ii. Έσοδα Έρευνας
B10iv. Κανονισμός ΒΚΦΕ
B10ix. ΦΕΚ Integrated Master
B10viii. ΦΕΚ Επαγγελματικά δικαιώματα
B11. Πρόσθετοι όροι
B11ii. Απόφαση Σχολής και Συγκλήτου
Diploma Supplement

Additionally, the School provided EEAP with a large number of samples of student assignments, theses and exam papers. This material was reviewed by the EEAP prior and during the meetings with the representatives of the School. Henceforth, and for the sake of brevity, the School of Naval Architecture and Marine Engineering of NTUA will be simply referred to as the "School''.

March 01, 2021: Orientation Meeting

On Monday, March 01, an online orientation meeting took place. The director of HAHE, Dr. Besta, presented the HAHE objectives for accreditation and discussed the accreditation process.

March 29, 2021: EEAP Private Meeting

The External Evaluation and Accreditation Panel (EEAP) met via teleconferencing and discussed the documents included in the proposal folder, the allocation of tasks and the timetable of the teleconferences with the School authorities, personnel, students, graduates and stakeholders.

March 30, 2021: Teleconference with the Vice-Rector of NTUA and the Dean of the School

On Tuesday March 30, the EEAP held a teleconference with the Vice-rector for academic, administrative and student affairs of NTUA, Prof. D. Gintides, and the Dean of the School of Naval Architecture and Marine Engineering, Prof. G. Zaraphonitis. The NTUA Rector, Prof. A. Boudouvis, welcomed the EEAP at the beginning of this teleconference. Then, the Dean provided an overview of the programme, including its history and evolution, academic profile, current status, strengths, and areas for further growth and improvement.

March 30, 2021: Teleconference with IEG & QAU representatives

The EEAP held a teleconference with the School's Internal Evaluation Group (IEG) and the university's Quality Assurance Unit (QAU) took place. In addition to the EEAP, the participants in the meeting were the QAU members Prof. D. Mamais, Prof. K. Nikita, Prof. S. Tsivilis and Assoc. Prof. S. Ponis, as well as the members of the School's IEG: Prof. M. Samuelides (co-ordinator), Prof. L. Kaiktsis, Assoc. Prof. N. Ventikos, Assoc. Prof. G. Papadakis, and Assoc. Prof. G. Papalambrou. Initially, Prof. M. Samuelides gave a detailed presentation of the structure of the undergraduate programme and further elaborated on the School's view, strategy and preparation with regard to the accreditation. Following this presentation, the EEAP discussed with the IEG and QAU the degree of compliance of the programme to the Quality Standards for Accreditation.

March 30, 2021: Teleconference with teaching staff members

Subsequently, the EEAP held a teleconference with academic staff from the School, namely, Prof. K. Belibasakis, Prof. and vice-rector I. Chatjigeorgiou, Prof. I. Prousalides, Prof. K. Spyrou, Prof. G. Triantafyllou, Prof. N. Tsouvalis, Assoc. Prof. D. Lyridis and Assoc. Prof. C. Papadopoulos. In the beginning, Prof. K. Belibasakis gave a presentation on the School's teaching philosophy and links between teaching and research. Then, the participants discussed a wealth of topics, covering teaching professional development opportunities, mobility, workload, student evaluations; competence and adequacy of the teaching staff to ensure learning outcomes; link between teaching and research; teaching staff's involvement in applied research, projects and research activities directly related to the programme; possible areas of improvement.

March 30, 2021: Teleconference with students

Subsequently, the EEAP held a teleconference with currents students of the School. Overall, nine students participated in this meeting. During the meeting the students elaborated on their experiences at the university and their level of satisfaction from the School and its facilities. Further, they provided input regarding quality assurances, and priority issues concerning student life and welfare. Generally, the students expressed their satisfaction with their studies and highlighted their good relationship with the academic staff and their appreciation for the experimental aspects of their study.

March 30, 2021: EEAP Debriefing

After the meeting with the students, the EEAP had a debriefing session, discussed the initial impressions from the first day of online discussions and set the priorities for the following day.

March 31, 2021: On-line tour: classrooms, lecture halls, libraries laboratories, and other facilities/Discussion about the facilities presented in the video produced for this purpose

This teleconference involved discussions about the School's premises and facilities (laboratories, classrooms etc). The Internal Evaluation Group provided a pre-recorded video of these facilities. Besides the EEAP, the participants in the tele-conferences were the following academic-staff members: Prof. G. Grigoropoulos, Prof. N. Kyrtatos, Prof. N. Tsouvalis, Prof. and Dean G. Zaraphonitis, Asst. Prof. K. Anyfantis and Asst. Prof. N. Themelis, as well as the following administrative staff members: Mrs. A. Tsoni (School Secretary) and Mrs. P. Giannaka (Secretariat Member). The EEAP were presented with the opportunity to evaluate facilities and learning resources to ascertain that the learning materials, equipment and facilities are adequate for a successful provision of the programme. The discussion also expanded upon the financial and administrative challenges for updating and renovating experimental facilities and teaching premises, and issues related to campus security.

March 31, 2021: Teleconference with Programme graduates

Subsequently, the EEAP held a teleconference with Programme graduates and discussed their experience of studying at the School and their career path. The participating programme graduates were the following: Mr. G. Christofilis (Jr. superintendent, Safety Management Overseas), Mr. P. Galetakis (currently serving in the Hellenic Navy), Mr. L. Lefteris (postgraduate student at MIT), Mr. P. Koutsogiannakis (doctoral student at Univ. Trento), Mr. C. Lignou (Project Engineer, TMS Cardiff Gas Ltd), Mr. G. Papageorgiou (naval architect/structural engineer, CONOSHIP International), Mr. A. Papazoglou (assistant superintendent, TECHNOMAR Shipping), Mrs. C. Stamou (technical support engineer, MARAN), Mrs. C. Traka (PhD Student at TU Delft) and Mr. D. Vlon (newbuilding projects engineer, LATSCO Marine Management). All the

participating graduates underscored the high quality of education they received and its positive impact on their professional careers. Moreover, they spoke enthusiastically about the help and support of the School's academic staff in their job search.

March 31, 2021: Teleconference with employers, social partners

Next, the EEAP held teleconference with employers and social partners, most of which were also graduates of the School. The participating stakeholders were Mr. M. Androulakakis (technical manager, AVIN International), Mr. S. Bourboulis (CEO, EURONAV SA), Mr. I. Chiotopoulos (senior vice president, DNV Hellas), Mr. A. Iordanidis (general manager of Alpha Marine Consulting), Dr. E. Kariambas (director, ABS Hellenic) and Mr. B. Tomazos (president, TECHNAVA SA). The discussion was very fruitful, and all participants mentioned that they hold the graduates of the School in very high regard and recruit them on a regular basis. Moreover, they spoke at great length of the significant contributions of the School to the maritime industry.

March 31, 2021: EEAP debriefing

The EEAP then assembled and discussed the key findings from the day's meetings.

March 31, 2021: Teleconference with QAU & IEG representatives

The EEAP met with the members of the Quality Assurance Unit and the Internal Evaluation Group. In a short meeting, the EEAP had the chance to clarify certain aspects regarding the revision process of the study programme.

March 31, 2021: Closure with the Vice-Rector, the Dean of the School, QAU & IEG

The EEAP met for the final meeting of the day with the vice rector and the head of the school, as well as the Internal Evaluation Group and the representatives of the Quality Assurance Unit. The chair of the EEAP had the opportunity to present informally the EEAP key findings.

During the two-day virtual visit, the EEAP was positively impressed by the professionalism and active contribution of all the members of the Quality Assurance Unit and Internal Evaluation Group and all faculty members and administrative staff who joined the meetings. Also, the EEAP has appreciated the high-quality presentations of the Dean Prof. G. Zaraphonitis, Internal Evaluation Group coordinator Prof. M Samuelides, and Prof. K. Belibassakis.

Finally, the EEAP extends its thanks to the Rector of NTUA, Prof. A. Boudouvis, for his welcome address, and to the Vice-Rector for academic, administrative and student affairs of NTUA, Prof. D. Gintides for his contribution in the opening and closing meetings.

III. Study Programme Profile

NTUA was founded in 1837 and is the oldest and most prestigious technological institute in Greece. Initially established by royal decree "on architectural education" it was a technical school operating on Sundays and holidays. By spring 1840 the technical school extended operation to a regular day school along with the Sundays' counterpart. Its official name in Greek, Εθνικό Μετσόβιο Πολυτεχνείο, was established in 1914. Currently, NTUA runs two campuses, the central-Athens (Patission) campus and the Zografou campus, plus the technological park in Lavrion, Attica.

The Department of Naval Architecture and Marine Engineering was established by government decree on May 15, 1969 and began to operate in the academic year 1969-70 as department of the then School of Mechanical and Electrical Engineering of NTUA. Following the publication of Higher Education Law 1268/82, by Decree of 26 August 1982, the Department became independent. At the same time, the Schools of NTUA were renamed and designated as Departments. The historical name "School'' was restored by a decision of NTUA in 2002, when the name "School of Naval Architecture and Marine Engineering'' came into effect.

According to the Ministerial Decision 131/483 (published in the Government Gazette no. 899/Issue 2 of December 13, 1993) the School is composed of the following four sectors: i) ship design and maritime transport, ii) naval and marine hydrodynamics, iii) marine engineering, iv) marine constructions.

Currently, the School employs 20 academic staff members (12 full professors, 4 associate professors, and 4 assistant professors), also referred to herein as "faculty members''. Also, according to the study guide, it currently employs 12 laboratory-teaching staff members (ΕΔΙΠ), 10 technical staff members (ΕΤΕΠ), 1 additional technical staff member (ΙΔΑΧ) and 10 administrative staff members. The School is located in the Zografou campus.

The programme in Naval Architecture and Marine Engineering leads to the Integrated Master (Δίπλωμα), upon accumulation of 300 ECTS during a minimum of five years of study. In other words, the Integrated Master is the same degree as the master's degrees in engineering offered by European Universities. With regard to the ECTS required for successful completion of the programme, 270 ECTS should be accumulated via coursework and 30 via the submission and successful defence of the master's thesis (διπλωματική εργασία).

New students are enrolled in September, before the beginning of the new academic year. 90 new students are admitted each year, on the basis of their performance in the national entry exam. However, additional students are admitted on the basis of social criteria, which raises the number of new students to approximately 120 students. Currently, there are 20 faculty members and 12 laboratory-teaching staff members (ΕΔΙΠ). Therefore, the student-to-teachers ratio is, by any measure, too high.

In addition to its undergraduate programme, the School organizes the inter-departmental postgraduate study programme in Marine and Ocean Technology.

The National Technical University of Athens is a research-oriented university; as such, its academic staff devotes a significant part of their time and energy in research activities. The same

applies without any doubt to the School of Naval Architecture and Marine Engineering; its academic staff carries research in a broad range of topics in Naval Architecture, Marine Engineering and Ocean Engineering. This is also reflected in the large number of doctoral students enrolled in the School. In the last few years, there are 5 to 6 PhD degrees that are conferred annually. The ratio of academic staff to PhD degrees conferred per year compares favourably with those of prestigious research-oriented universities in Europe and the US.

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

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

QAU includes a representative from the School and its actions depend on NTUA central policies. Coordination between the Internal Evaluation Group (IEG) and QAU 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. QAU has procedures in place to ensure continuity of the Quality Assurance (QA) process.

Discussions and interviews with QAU, the School faculty 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. It is noted that the number of incoming students is decided by the Ministry of Education, which may limit the flexibility of some relevant Quality Indicators (QI). However, in general, the QA policy and QIs are comprehensive and under continuous consideration for improvement.

All participants pointed the underfunding from the State; however, the School has managed to establish a high-quality study programme. All stakeholders have pointed to the need for additional permanent staff in order to maintain the high-quality 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

R1.1: Establish an external advisory board to meet on a regular basis, for strengthening the school's links with industry and other stakeholders.

R1.2: Pursue the timely hiring of new faculty members and technical and administrative staff, which in turn will contribute to sustaining the high-quality standards adopted by the School.

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 School has designed and implemented its study programme based on appropriate international standards and current practice. The basic factors that are taken into account in the design of the programme include, but are not limited to, the institutional strategy, the active participation of students, the anticipated workload according to the ECTS system, the smooth progression of students throughout the stages of the programme, the linking between teaching and research, the option to provide work experience to the students, as well as the relevant regulatory framework.

The curriculum is coherent, comprehensive and quite extended, covering all scientific and technological areas related to the modern practice of Naval Architecture and Marine Engineering. Further, it follows appropriate accepted standards for studies in these engineering disciplines. All aspects and details regarding the undergraduate programme are published in a comprehensive and well-prepared study guide ("οδηγός σπουδών'').

The structure of the study programme is elaborated in a clear and comprehensive manner and its main features are the following.

- Each academic year is divided in two semesters. There are three examination sessions per year (one at the end of each semester and one in September).
- The early semesters of study consist of courses in exact sciences (mathematics, physics etc), basic courses in mechanical engineering (thermodynamics, fluid mechanics, heat and mass transfer, machine elements and others), as well as basic, foundational courses in naval architecture (naval-architecture drawing, ship hydrostatics and stability, and others).
- As the years of study advance, the courses become more technology-oriented and of more applied nature.
- The programme of the first seven semesters consists almost entirely of compulsory courses (i.e., courses that all students must take), whereas there are many more optional courses in the 8th and 9th semesters. In particular, the 9th semester consists entirely of optional courses.
- The optional courses offered by the School are grouped in 5 different themes: i) marine structures and marine environment, ii) ship design and construction, iii) marine engineering and ship propulsion, iv) exact sciences, v) courses on mechanical engineering, and vii) other courses on Naval Architecture and Marine Engineering.
- The 10th (last) semester of study is devoted to the master's thesis, which counts for 30 ECTS, i.e., 10% of the required ECTS for the obtention of the Master.

These features are common in engineering curricula across the European Union. In other words, the curriculum structure fully conforms to current practice and standards. Furthermore, the curriculum is fully appropriate with regard to the current needs of, and demand from, the relevant industries and technological sectors (maritime industry, shipbuilding industry etc.)

The procedure for periodic revisions of the study programme is well elaborated and explained. Furthermore, this procedure is appropriate with respect to the mission of the school and the specific fields of study that it serves. More specifically, the strategic objectives with regard to the study programme are discussed by the General Assembly of the School and are delineated at the Sector level. Then, revisions of the programme are organized and implemented by the Undergraduate Students Committee (consisting of one academic staff from each sector plus a student representative) and in collaboration with the academic and scientific personnel of the School and the Quality Assurance Unit of the Institution. Revisions are performed annually, which is in accordance with current standards. The EEAP finds that the participation of a student representative in the Undergraduate Study Committee is a very positive element, even though the students have thus far only partially taken advantage of it.

The EEAP finds it is very positive that the study programme undergoes an annual evaluation by NTUA's Quality Assurance Unit, and that possible revisions and modifications are considered on a regular and systematic basis by the School's Internal Evaluation Group and Undergraduate Study Committee, thereby guaranteeing its smooth evolution, compliance with international standards and appropriateness in relation to current trends and demands of the job market.

The School has opted for an integrated, single-track study programme ("ενιαία κατεύθυνση''), combined with a plethora of optional courses over a broad range of topics. The EEAP considers this to be a positive feature which is fully in line with the current needs and demands of the job

markets. Also, the required number of courses for obtention of the master's degree is around 60 (depending on the ECTS of the optional courses chosen by a student), which is in accordance with current international practice.

Currently, the median time required for obtention of the Master is approximately 6.5 years, which is half a year shorter than in the past. This reduction has resulted from the systematic and good-quality revisions of the undergraduate programme. EEAP finds this reduction to be an important positive development. Furthermore, the current median time is considered to be quite reasonable, given the scope and breadth of the curriculum.

Another positive development resulting from the evolution and regular revision of the study programme is the strengthening of good practices such as: ample opportunities for internship, well-structured and properly articulated procedures related to master's thesis, participation of student competitions like OKEANOS, possibility of working on the ship-design project in pairs, and others.

Up until recently, the consultation of graduates, external experts and stakeholders with regards to curriculum revisions has been performed on a mainly informal basis. However, the EEAP considers that the School can take advantage of its good relations and links with the industrial world and organize this procedure on a more formal and systematic basis. Examples of particularly appropriate actions that the School may take in this direction are: i) the regular surveying of the School's graduates on their studies at the School, and ii) the formation of an External Advisory Board (i.e., without any institutional role or executive authority), consisting of graduates and industrial stakeholders. To this end, the EEAP opines that the recent initiative of the School to reinvigorate the Alumni Association ("σύλλογος αποφοίτων'') is a very positive development.

The EEAP acknowledges the efforts of the School to streamline the material covered in exact-science courses. Notwithstanding their merits, these efforts led to a decrease in the volume of early-semester courses in the exact sciences (notably mathematics, but also physics and mechanics) in favour of technological ones. However, exact-science courses provide students with foundational knowledge and enhance their flexibility, which are essential ingredients for their success as engineers and decision makers in an ever-evolving professional landscape. Further, a solid background in exact sciences is necessary for students wishing to pursue an academic or research-oriented career.

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

R2.1: Receive feedback from graduates and industrial and social stakeholders on a regular basis.

R2.2: Do not reduce further the number or teaching hours of courses in exact sciences.

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 EEAP was presented with a number of actions over the past few years aiming at more active participation of students in the learning process. The undergraduate curriculum has recently undergone a major revision taking also into consideration the recommendations made during the School's external evaluation in 2012. Main characteristics of the revised curriculum emphasizing the student centric approach include:

- The student body provides input to the School's General Assembly regarding the design of the curriculum.
- The reduction of the total teaching hours per week within internationally accepted standards.
- The concentration as far as practicable of the main teaching activities within the same location and within a time period of 8:45 to 14:30 Monday through Friday.
- The introduction of a large number of optional courses in the 8th and 9th semesters allowing the students to shape their studies according to their talents and interests.
- The use of grading methods other than the final examination, such as mid-term exams, projects, presentations etc. contributing to the final grade. Through the interview with the faculty members, it was established that more extensive use of the above alternatives although desirable is hindered by the large number of students per faculty member.
- Promoting teamwork through group exercises and the flexibility to do the ship design project in pairs.

The School promotes the concept of Academic Advisor who will assist the students to streamline their studies and chose the learning path that works best for them. However, it was stated that, to date, this concept has not been widely taken advantage by the student community.

Students are given to opportunity to provide feedback at the end of each course through quite comprehensive, well-designed and detailed questionnaires. However, the response rate is quite low. Based on the statistics provided to EEAP, the overall scoring is very positive.

Student appeals mostly concern grade attribution. They typically consist of direct discussion between the student concerned and the respective faculty member, mostly via emails. The School pays appropriate attention to student appeals and a formal appeals procedure is in place, eventually reaching the level of the School's General Assembly. However, students asked about this matter stated that they were unaware of any such formal procedure.

Interviewed students spoke very positively about the participation in programmes such as ERASMUS, OCEANOS etc. However, they did not feel that the School provides adequate support in that direction and they had to pursue their participation mostly by themselves through the university central administration. Similarly, the number of incoming exchange students from European universities is minimal.

The students' response when asked about their overall opinion regarding their studies and their experience with the School was unanimously positive. The EEAP considers that the undergraduate programme of the School satisfies the requirements of student-centricity and provides sufficient freedom to the students to plan their academic path.

Currently, the study programme offers some opportunities for the development and enhancement of soft and transferable skills, mainly via the ship-design project, the practical training and student competitions. However, as was pointed out during the meetings of the EEAP with current students and industrial stakeholders, more coordinated efforts are required in this direction.

Panel Judgement

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

Panel Recommendations

R3.1: Encourage and support students to participate in exchange programmes like ERASMUS. Pursue the hosting of incoming exchange students.

R3.2: Prepare a guide on student rights, including formal appeals procedures, and communicate it to the students.

R3.3: Prioritize the development and enhancement of soft and transferable skills.

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 School follows NTUA's regulations and the programme study guide ("Οδηγός Σπουδών'') which are communicated to new students for the organization and execution of their programme of studies. Each student is assigned an Advisor (faculty member) whose role is to assist the student with the details of their studies, including academic issues and difficulties the student may encounter. As this is a principal mechanism for monitoring student progress, the School intends to strengthen the role of the Advisor and encourage regular meetings with the student, so that student progress can be monitored in an effective manner. The EEAP considers this as a positive and appropriate measure.

The School has maintained the system of "prerequisites''. According to it, enrolment in certain courses of advanced semesters is conditional upon a minimum grade of 3/10 in relevant background courses of earlier semesters. This system is in accordance with international standards and practice and constitutes a significant feature of the programme because it supports smooth study progression. For this reason, it is proposed to be maintained.

The School admits students with very high grades in the national entry exam. However, a considerable number of students are added based on various social criteria. The number of students has increased significantly over the last 7-8 years. This has resulted in issues relating to availability of resources, such as classrooms, lecture theatres and allocation of lab sessions.

Student mobility is possible mainly via the ERASMUS programme. However, very few students choose to transfer for a period of their studies (typically one semester), possibly due to insufficient encouragement and/or lack of administrative support.

An internship programme (Practical Exercise) is available to the students as an elective course during their studies. The duration is two months and the students are engaged in a work role in a shipping company, classification society, shipyards, design and technical bureaus. From data presented to the Panel, there are roughly 70 students participating in the Practical Exercise. It should be noted that the Practical Exercise is a graded course of the undergraduate programme, as the student submits a final technical report to the School. At the Panel's meeting with the stakeholders, the support to this programme was clear and enthusiastic both in terms of positions offered as well as of the quality of the work performed by the students.

Upon graduation, master's certificates, academic transcripts and master's degree supplements are issued in Greek and English, detailing the courses attended and marks achieved, as well as the global master's degree grade and classification. The ETCS system is followed across all the curriculum, supporting graduation recognition and certification. Students also receive awards for their performance during their studies.

Panel Judgement

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

Panel Recommendations

R4.1: Strengthen the provision of a student progress-monitoring process.

R4.2: Encourage students to participate in the student mobility and exchange programmes such as ERASMUS.

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 School follows applicable laws and regulations and implements a transparent and rigorous procedure for the recruitment of new faculty members (academic staff), as well as for the promotion of existing ones. Among all requirements, the School emphasizes those of excellence in teaching and research and linkages between research and teaching. The School strategizes the needs for new academic members, and with the support of NTUA has been in a position to recently recruit new faculty adding value on emerging areas of knowledge and research. In this way, the School has managed to a large extent to alleviate on the effects of recent and forthcoming retirements of academic staff.

There is significant evidence of linkages between teaching and research. As NTUA is clearly a research-oriented technical university, all labs used for teaching purposes are established research and development labs. The academic-staff members in the School have significant research output in all applicable metrics, including volume and quality of scholarly publications, award of significant research grants by the European Commission, National sources and the industry, number and quality of doctoral graduates, recognition of quality of research by academic staff as recipients of international prestigious awards.

This linkage has a lot of benefits on student learning and development, such as appreciation and engagement with current industrial trends, coursework of authentic content, and selection by the students of research-intensive topics for their master's thesis. All these create a holistic learning environment, as it is coupled with typical solid theoretical foundations of NTUA graduates. It is worth also noting at this point, that some faculty are attempting innovations in teaching, such as virtual lab sessions. There is lack, however, of expert technical lab staff, as well

as severe bureaucratic barriers for the procurement, renewal and maintenance of lab equipment.

The professional development of faculty is achieved via a transparent and rigorous process for academic promotions, and active involvement in teaching, research and development activities, as mentioned above. It should be mentioned that in a recent recruitment selection for a new member of staff, the first female faculty of the School has been selected and will start serving soon, contributing this way to gender equality.

Regarding the establishment of quality assurance procedures, the School has recently decided to introduce an electronic calendar where the details for each teaching activity will be recorded, including information such as date, time, instructor, course, topic, purpose of teaching, etc. This calendar will be made visible by all students and all faculty.

Panel Judgement

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

Panel Recommendations

R5.1: Intensify efforts for the timely hiring of new faculty members.

R5.2: Target recruitment of expert technical staff for the laboratory facilities. Promote common pooling of technical staff for similar labs and work scopes across NTUA.

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 occupies its own building complex in the University Campus. The complex contains 15 teaching rooms with a total capacity of 829 people and 26 laboratory rooms with a total capacity of 215 people. Two of the above rooms are equipped with interactive boards and two others are equipped with fixed projector systems.

The School maintains the following laboratory units with significant teaching and research activities: Laboratory of Marine Engineering, Ship Design laboratory, Laboratory for Ship and Marine Hydrodynamics, Shipbuilding Technology Laboratory, Laboratory for Floating Structures & Mooring Systems, Laboratory for Maritime Transport, Dynamic Stability Laboratory and Dynamics and Electrotechnical Applications Laboratory.

The School also occupies a computer laboratory comprising 28 workstations (laptops) connected to internet through wire. Wireless connection is also available for students bringing their own personal computers. The School is currently organizing a second personal computer laboratory with similar characteristics as the existing one.

On the administrative level, students and faculty are supported by the School's secretariat, comprising of 10 members (according to the study guide).

NTUA offers its students support in a number of ways:

- Free or subsidized food is available to the student body.

- Library facilities are equipped with all necessary publications. All master's theses and PhD dissertations are kept in an electronic format.
- Health insurance is provided to students without it.
- Wireless internet access is available on campus.
- Support/counselling facilities for students with disabilities or special needs.

However, it appears that various services offered to students can be further improved, especially those that touch upon student counselling and support.

The School uses NTUA's digital platform for educational support (https://mycourses.ntua.gr) for all the courses offered in the undergraduate programme. For each course, general data and instructor information is provided, the time schedule with various activities (lectures, tutorials, practicals, labs, etc.) during the semester, course announcements via bulk emails to all users, uploading of all lecturing material for student use (lecture notes, presentation slides, tutorial and lab handouts, etc.), areas for the students to upload their coursework and assignments. Instructors have the option to also upload marks and generate statistical data of students' performance. The EEAP was given access to the webpages of some of the courses, and confirms that the platform is comprehensive, user-friendly and easy to navigate.

The EEAP was informed during the interviews that in recent years the number of incoming students has increased dramatically for reasons beyond School's control. This results to overcrowding of teaching rooms and overload of the faculty members. The above is exacerbated by the reduction in faculty members mainly due to a number of recent retirements of a number of professors. It was also brought to the attention of EEAP that the administrative staff in the secretariat has also been significantly reduced.

The budget of the School is centrally administered by the University and this creates inefficiencies in proper and timely fund allocations. Examples include the very lengthy process for procurement of equipment and unavailability of funds to renew laboratory consumables, and the like. As a result, a number of laboratory facilities cannot operate to their full capacity, which in turn endangers the implementation of the laboratory projects of the students and introduces delays in the completion of master theses. Furthermore, a lot of facilities are in need of renovation and upgrading. It was pointed out that the faculty is doing everything in their ability to offer the best of services under the given circumstances.

Panel Judgement

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

Panel Recommendations

R6.1: Intensify efforts for the timely hiring of new faculty members.

R6.2: Pursue recruitment of expert technical staff for the laboratory facilities.

R6.3: Pursue the reduction of bureaucratic barriers for the procurement, renewal and/or maintenance of laboratory equipment.

R6.4: Consider the option of sharing equipment with laboratories of other Schools of NTUA.

R6.5: Expand the current scope of the office responsible for student care and support.

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 analysing information and planning follow-up activities.

Study Programme Compliance

The School has established and operates information systems for digital gathering, registering and processing of data relating to students and their progress. The main database is kept by the School's Registry on which each student has its own record comprising personal data and data relating to the student's performance during his studies, including courses registration, number of attempts per course and grades achieved. For compliance with data protection, this database is only accessible on campus and by authorized Registry staff.

These data are used to monitor the progress of each student in their studies. They are also used for the derivation of useful statistical data for each course for the whole student population, for semester and year, and for the whole undergraduate programme of studies, such as the median time and grade for graduation. This information can in turn be utilized for the evaluation, review and updating of the whole undergraduate programme. As presented during this visit to the Panel, the School has evidently made use of such statistical data for the recent thorough review of the academic structure of the undergraduate programme.

For the gathering of career paths' data and professional development of the graduates there is a variety of studies initiated centrally at NTUA by Career Services ("Κέντρο Διασύνδεσης'') as

well as by the Technical Chamber of Greece. These studies are not conducted regularly and there is a need for a more systematic approach. The recent efforts to reinvigorate the School's Alumni Association will certainly boost the collection and utilization of data on career paths and opportunities and will formalize interactions among graduates.

Students are given the opportunity to feedback and evaluate courses they have attended in each semester; however, the response is very low. The survey questionnaires are very comprehensive and aim at evaluating a wide array of key performance indicators relating to the course, labs, instructor and support teaching staff.

Finally, the EEAP notes that a centrally administered service for data collection and analysis would be particularly beneficial to all aspects related to information management

Panel Judgement

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

Panel Recommendations

R7.1: Continue the improvement of processes for data collection and analysis; pursue the establishment of a centrally administered service dedicated to these processes.

R7.2: Pursue systematically the reinvigoration of the School's Alumni Association.

R7.3: Promote students' participation in course evaluations.

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 School maintains its own website providing information to students and general public relating to its study programmes and its activities in general. Information included therein relates to:

- School itself (history, governance, administration, contact details)
- The profession of Naval Architect & Marine Engineer
- The undergraduate and graduate programmes offered by the School
- The research activities
- The personnel
- The Alumni Association
- Bulletin board
- Job opening from the market
- Various useful documents

However, not all information provided therein is up to date.

The website was re-designed from scratch five years ago and contains a sufficient amount of information. However, it is currently available in the Greek language only. This is considered as a significant shortfall and is also hindering the direct accessibility of international stakeholders to the relevant information. Nonetheless, it is encouraging that, during the meeting of the EEAP with the faculty members, it was concluded that making the website available in English is an immediate priority.

The School's laboratories maintain their individual websites through which they offer information related to their research capabilities and infrastructure, their personnel and their teaching and research activities. These websites have been developed in the English language.

General information for the students and the public are also offered by a number of shared NTUA websites such as the central website of NTUA, the library website etc. The School also uses NTUA's digital platform for educational support (https://mycourses.ntua.gr) details of which have been presented in the previous section.

The School has also organized a number of events marking significant milestones such as:

- An event in Evgenidio Foundation for the 45th anniversary of the School's establishment in 2014
- An event in Niarchos Foundation for the 50th anniversary of the School's establishment in 2019.

The above events were attended by faculty members, graduates, ship-owners and upper management representatives of shipping companies.

Panel Judgement

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

Panel Recommendations

R8.1: General maintenance/clean-up of the website is necessary to ensure that the information provided therein is up to date. An English version of the website is also a clear priority.

R8.2: Intensify the efforts for reinvigoration of the Alumni Association.

R8.3: Explore possible use of social medial for rapid communication of information to interested parties.

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 University's QA system addresses this principle comprehensively. There is a data collection infrastructure for quality assessment based on student's and staff's surveys. This collection of quality indicators includes data on enrolment, grades, course and exam attempts, teaching load, teacher performance metrics, and other useful statistics. The administration reports annually, a report for control and analysis. Several years of this report have been presented as proof of compliance with this criterion.

The School collects feedback on the content of the programme through a number of sources. They are also actively in contact with many maritime and shipping companies through which they can receive these comments. Employers are generally very satisfied with student preparation and believe that the programme provides an extremely strong foundation for the job market. The discussion that the EEAP held with industrial stakeholders confirmed this high level of programme interaction and alignment with their needs. Changes regarding the courses and the programme are evaluated and proposed through a formal process and is approved through the Committee for Study Programme. 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.

Student expectations, needs, and complaints are collected through surveys that are distributed as part of each course. However, the response rate for course surveys is low. During the discussion with current students, they claimed that the most effective method of offering feedback was informal discussion with the instructors on course quality/workload/etc.

One of the challenges 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.

Panel Judgement

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

Panel Recommendations

R9.1: Logged student responses to course surveys could stand to be improved.

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, which took place this academic year, 2020/2021. The School has provided evidence actions that were taken since 2015/16, which, overall demonstrates considerable progress.

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

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

Panel Judgement

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

Panel Recommendations

R10.1: The external evaluation process should take place on a regular basis, at least once every five years.

R10.2: Establish an external advisory board and receive feedback from graduates and stakeholders on a more systematic basis.

PART C: CONCLUSIONS

I. Features of Good Practice

- Established quality-assurance process and practices.
- Cooperation between the Internal Evaluation Group and the Quality Assurance Unit.
- System of prerequisites.
- Satisfactory median time required for obtention of the Master.
- Satisfactory number of hands-on projects and experimental projects.
- Appointment of academic advisor for each first-year student.
- Good-quality online resources for the courses.
- Friendly atmosphere in the school.
- Faculty members help students in their job search.
- Good-quality research output by the School.
- Strong linkage between teaching and research.

II. Areas of Weakness

- Too high student-to-faculty ratio.
- Insurmountable bureaucratic barriers for the procurement, renewal and maintenance of the School's laboratories and premises.
- The School's website is not regularly updated and does not have an English version.
- Infrequent surveys of graduates on the study programme.

III. Recommendations for Follow-up Actions

- Intensify efforts for the timely hiring of new faculty members.
- Establish regular surveys of graduates on the study programme.
- Intensify the efforts for the reinvigoration the Alumni Association.
- Establish an external advisory board.
- Update the School's website regularly and add an English version of it.
- Strengthen the provision of student progress-monitoring and student support.
- Promote students' participation in course evaluations.
- Expand the participation in student mobility and exchange programmes.
- Pursue recruitment of expert technical staff for the laboratory facilities.
- Prioritize the development of soft and transferable skills.

IV. Summary & Overall Assessment

The Principles where full compliance has been achieved are: **1, 2, 3, 4, 5, 7, and 9.**

The Principles where substantial compliance has been achieved are: **6, 8, and 10.**

The Principles where partial compliance has been achieved are: **None.**

The Principles where failure of compliance was identified are: **None.**

Overall Judgement	
Fully compliant	**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. **Professor Miltiadis Papalexandris (Chair)**
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2. **Assoc. Professor Dimitrios Konovessis**
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3. **Dr. George Maglaras**
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