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Accreditation Report
for the Undergraduate Study Programme of:

Mathematics

Institution: University of Aegean

Date: 27 June 2020

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 Program of **Mathematics** of the **University of Aegean** 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 Undergraduate Study Programme of Mathematics of the University of Aegean comprised the following four (4) members, drawn from the HAHE Register, in accordance with Laws 4009/2011 & 4653/2020:

1. **Prof. Alekos Vidras (Chair),** University of Cyprus, Nicosia, Cyprus
2. **Prof. Nikolaos Dimakis,** University of Texas Rio Grande Valley, Texas, USA
3. **Prof. Panagiotis Souganidis,** The University of Chicago, Chicago, Illinois, USA
4. **Prof. Nikolaos Stylianopoulos,** University of Cyprus, Nicosia, Cyprus

II. Review Procedure and Documentation

The External Evaluation Accreditation Panel, henceforth the EEAP, conducted the accreditation evaluation of the undergraduate program of the Department of Mathematics at the University of Aegean during the period of June 22-23, 2020. The report was prepared by the EEAP during the period of June 24 -27, 2020. Due to the Covid-19 pandemic, the EEAP could neither visit the site nor meet physically. As a result, both the accreditation evaluation and the preparation of the report were conducted via Zoom teleconferencing. On June 19, 2020, two members of the EEAP attended a Zoom teleconference briefing by HAHE's General Director Dr. Christina Besta, who explained and outlined the procedures of and the rationale for the accreditation. The ppt file of Dr Besta's presentation was later emailed to the EEAP members.

The EEAP members received in advance from HAHE the following documentation and supporting material:

1. Guidelines for accreditation created by HAHE.
2. The mapping grid created by HAHE.
3. A tabulation, prepared by HAHE, of the scores of the Department's quality indices for the years 2015 – 2018.
4. The accreditation information prepared by the Department.
5. A set of annexes to the accreditation proposal, including the study guide, course descriptions, etc.
6. Statistical data regarding the Department and the specific program of studies.
7. The quality assurance (QA) policy of the specific program of studies.
8. A set of documents presenting quality indicators both for the Department and the program.
9. The report of the 2013 external evaluation of the program conducted by HAHE (then HQA).
10. The results of the internal evaluation of the program.

The EEAP also had access to links of the University and the departmental websites. Moreover, during the virtual on-site visit, the Department Head Prof. Kostas Housiadas provided additional materials, including electronic versions of power-point presentations prepared and presented by the department on selected undergraduate exams, problem sets, and their solutions.

On June 22, 2020, the EEAP met the Vice Rector for Academic Affairs and Student Welfare/President of MODIP Prof. Elena Theodoropoulou and the Head of the Department of Mathematics. Subsequently, Prof. Housiadas introduced the members of OMEA and MODIP and gave a brief presentation, focusing on (a) the history and structure of the department, (b) the teaching, and (c) the outreach activities and other matters related to the program. A discussion followed with emphasis on the revised program of studies that the department has implemented in the last few years, as a result of the 2013 external evaluation. The same day, the EEAP had a series of teleconference meetings with departmental personnel, including members of teaching staff and representatives of the students. The day ended with the EEAP's debriefing.

On June 23, 2020, the EEAP had an online video tour of the facilities of the department including lecture halls, classrooms, libraries, laboratories, and other facilities. The EEAP also had the opportunity to evaluate the resources available to the department and to interact with the Head of the department, as well as with teaching staff and administrative staff members. The day continued with a teleconference meeting involving graduates of the program, henceforth alumni, employers, and social partners. The day ended with a final teleconference meeting with OMEA members and MODIP representatives.

Due to the Covid-19 pandemic and the fact that classes had ended for the semester, the EEAP did not have the opportunity to observe any teaching.

The schedule of the two days e-visit was organized efficiently and gave the EEAP a thorough picture of the department's vision and efforts for its undergraduate student education.

The quality of the department's undergraduate program is aligned with international standards.

The EEAP was impressed by the dedication and commitment of the teaching staff, and the department's rigorous procedures for checking the QA of their undergraduate program. As it will also be indicated in the report, while there is room for considerable improvement of the teaching and training of the students, many of the weaknesses of the undergraduate program are due to factors external to the department. These are a) the ever-changing numbers of admitted students, b) the large number of students transferring away from the department, c) the limited space and facilities, and d) the continuous decline of the quality of the new students as measured by the decreasing score in the entrance examination.

On June 24, 2020, the EEAP began the preparation of this report, which was completed and submitted on the due day June 27, 2020.

III. Study Program Profile

The Department of Mathematics was established upon the founding of the University of Aegean as one of the two departments within the School of Sciences. The second department of the School is the Department of Statistics-Actuarial Science and Financial Mathematics. At some point these two departments were blended into one, but continued to function as separate divisions. However, on the academic year 2018-2019, the Department of Mathematics became again a separate unit within the School of Sciences.

Presently, the Department of Mathematics has 20 faculty members (8 Assistant, 5 Associate, and 7 Full Professors), 1 instruction staff, 3 administrative personnel, and 2 computer lab assistants. In addition, on average, there are 3 to 4 time-limited contract teaching staff. The EEAP was informed that, at the present time, there is an opening for an additional academic position. Unlike other mathematics departments in Greece, this department under review is not divided into scientific sections. However, the interests of the faculty are quite diverse and include Mathematical Analysis, Algebra and Geometry, Mathematical Physics, Differential Equations, Mathematical Education, Modern Information Technology Applications, and Computational and Applied Mathematics. There are 3 research labs.

The department awards a B.Sc. degree in Mathematics and has Masters and Ph.D. degree programs.

The B.Sc. degree in the Mathematics Department at University of Aegean requires a successful completion of 17 compulsory mathematics courses and 11 other courses from the department's list. The rest of the courses are elective. In total, to graduate students must complete successfully courses corresponding to 240 ECTS. The program is designed for 8 semesters or equivalently for 4 years. However, the majority of students take longer to finish. According to the data provided to the EEAP, among the students who graduated in the academic year 2017-2018, 16.5% finished in 4 years, about 27 % in 5 years and about 31 % in 6 years. The rest of the students who graduated in 2018 (about 25%) took more than 6 years to finish. It must be noted that, in the experience of the EEAP, these numbers are better than in most other Mathematics Departments in Greece.

Currently, approximately 1050 undergraduate students are enrolled. However, the number of active students is only about 500. In the EEAP's opinion, this is very serious problem since it creates a real burden to resources and time. The EEAP recommends that the department in coordination with the University and higher government authorities analyse and address this problem.

The latest HAHE data indicate that the undergraduate program admitted, on average, approximately 200 students per year during the period 2015-2018, although this number varies considerably from year to year. For example, one year it was 150 students, while the next year it was 260 students. These variances are too abrupt for a department of 20 academic staff members. The number of admitted students for the current academic year (2019-2020) was basically the same (250). However, the actual number of students remaining in this Department of Mathematics varies from about 60 to 90. The reason is that students are transferring to other Greek Universities. While there may be legitimate reasons for few of these transfers, the large number of transferring students creates problems in the education and the training of the students remaining in the program.

The EEAP strongly believes that the number (250) of entering students, which is dictated by the Ministry of Education, is totally unrealistic for a department of 20 faculty members, and cannot be sustained without having a very negative impact on the quality of education. In addition, allowing about half of these students to transfer seems to be politically motivated in order to indirectly allow students to enter to departments located in large metropolitan areas through the back door, rather than a policy of social support.

The last external evaluation of the department took place in 2013. On the basis of the recommendations made in that review, the department revised substantially many of its curriculum procedures in a positive way. However, some of the suggestions made have not been yet addressed and will be revisited in this report.

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 realize the program's strategic goals and it will determine the means and ways for attaining them; it will implement the appropriate quality procedures, aiming at the program'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 labor market;
h) the quality of support services such as the administrative services, the Library, and the student welfare office;
i) the conduct of an annual review and an internal audit of the quality assurance system of the undergraduate programme(s) offered, as well as the collaboration of the Internal Evaluation Group (IEG) with the Institution's Quality Assurance Unit (QAU).

Study Programme Compliance

The University has established an appropriate QA policy, which fully satisfies the relevant requirements. The Key Performance Indicators (KPIs) are regularly updated. The Department of Mathematics follows the guidelines of its institutional policy. The MODIP monitors and enforces its QA. The department's general assembly has the overall responsibility for reviewing its entire study program and ensures its consistency with the QA standards.

Following the evaluation of 2013, the department consolidated the courses required for a degree to 32. The revised curriculum provides a satisfactory mathematical background. Overall, its undergraduate program meets international standards. The EEAP met with a number of students and graduates, who indicated that they are highly satisfied with the program and their education.

The department has active researchers, and this affects positively and broadens the undergraduate education. However, at present there is no official process for recording annual activities of the academic staff on an individual basis. The EEAP strongly believes that this needs to be rectified. Explicit recommendations are shown below.

The QA policy is in place and the MODIP within the university structure oversees its proper and regular implementation.

Panel Judgement

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

Panel Recommendations

1. Continue to have all relevant policy documents pertaining to the department readily available and accessible.

3. The faculty should maintain up to date webpages listing their education, academic positions, service, teaching, and a complete list of publication.

2. At the beginning of every academic year, each faculty member must submit to the Head of the department an updated CV and 1-2 pages “yearly activities” report.

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 organization, 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 labor market*
- *the smooth progression of students throughout the stages of the programme*
- *the anticipated student workload according to the European Credit Transfer and Accumulation System*
- *the option to provide work experience to the students*
- *the linking of teaching and research*
- *the relevant regulatory framework and the official procedure for the approval of the programme by the Institution*

Study Programme Compliance

The program is designed by a departmental committee and is considered and approved by the general assembly. The EEAP believes that the overall structure aligns well with similar programs in Greece and abroad. The student guide contains a lot of appropriate information and is well thought of. However, the EEAP noticed that the syllabi of several courses were not well prepared, and, in several cases, the course descriptions have significant overlaps. This indicates that the departmental committee needs to be more vigilant with the course reviewing process.

In designing the program, the department considers input from the stakeholders, external experts, its students, and alumni. The entire process, including program revisions, is overseen by the MODIP.

Currently the ECTSs required for the degree are (at least) 240, corresponding to 32 courses. This complies with the general requirements of the European Credit Transfer and Accumulation System. An issue that the EEAP observed and perhaps needs to be addressed by the department is the fact that students have the option to register for a large number (up to 57 ECTS) of courses.

Panel Judgement

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

Panel Recommendation

1. The department must make an effort to avoid overlaps among courses and to provide accurate descriptions of the classes offered.

2. The department should encourage active participation of the alumni and the external stakeholders in the curriculum development.

Principle 3: Student- centered 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-centered learning and teaching play an important role in stimulating students' motivation, self-reflection and engagement in the learning process. The above entail continuous consideration of the program's delivery and the assessment of the related outcomes.

The student-centered learning and teaching process

- *respects and attends to the diversity of students and their needs, enabling flexible learning paths;*
- *considers and uses different modes of delivery, where appropriate;*
- *flexibly uses a variety of pedagogical methods;*
- *regularly evaluates and adjusts the modes of delivery and pedagogical methods aiming at improvement;*
- *regularly evaluates the quality and effectiveness of teaching, as documented especially through student surveys;*
- *reinforces the student's sense of autonomy, while ensuring adequate guidance and support from the teaching staff;*
- *promotes mutual respect in the student - teacher relationship;*
- *applies appropriate procedures for dealing with students' complaints.*

In addition :

- *the academic staff are familiar with the existing examination system and methods and are supported in developing their own skills in this field;*
- *the assessment criteria and methods are published in advance;*
- *the assessment allows students to demonstrate the extent to which the intended learning outcomes have been achieved. Students are given feedback, which, if necessary is linked to advice on the learning process;*
- *student assessment is conducted by more than one examiner, where possible;*
- *the regulations for assessment take into account mitigating circumstances;*
- *assessment is consistent, fairly applied to all students and carried out in accordance with the stated procedures;*
- *a formal procedure for student appeals is in place.*

Study Programme Compliance

The department has clear assessment criteria, which are communicated to the students at the beginning of each course, through a guide (the "Πρόγραμμα" Guide), which is well-designed and is posted on the department's webpage. The guide contains an extensive syllabus and detailed description of each course. However, it was noticed that the course descriptions have significant overlaps in several occasions, which raises concerns about the oversight of program by the faculty.

Student complaints or other student-instructor issues are handled properly. First the student discusses the issue with the corresponding instructor. If the problem remains unsolved, then the

department intervenes to address the issue following university procedures. The student has the option to discuss the problem directly with his/her academic advisor.

The department has established satisfactory procedures for student advisement. Each student is assigned a first-year academic advisor.

Students have the options for diploma thesis and internships. Also, students can take courses from a list of the other two departments located in Karlovassi.

Traditional (chalk and blackboard) and modern teaching methods (power point presentations, course materials available in the internet, etc.) are utilized in the courses.

The department is facing an almost impossible problem. The quality of admitted students, as measured by the scores of the University entrance examinations, is continuously declining. Then a large part of the admitted students does not show up for classes during the first semester waiting for a transfer to another program within Greece. In the meantime, the faculty needs to plan for teaching an unknown number of ill prepared students. The department is, of course, aware of this situation and has already taken some steps to deal with the issue by introducing some lower level first year classes to allow for a better transition and bridging of the obvious educational gaps.

The EEAP believes that more needs to be done. In general, the department should adapt to this reality, by adjusting their curriculum. The students at the Department of Mathematics of the University of Aegean cannot begin with courses at the same level and content as the corresponding students at the University of Athens. This does not mean that the final degree will be inferior, but rather that a transition period is needed in order for its students to adjust. This is a standard practice in all other countries where the universities adapt to the level of their student bodies. Adapting the curriculum to meet the needs of the students does not lower the quality of the degree. On the contrary, it shows that the faculty appreciates the needs of the students and works to improve their education. It should be noted that, after talking with students, the EEAP reached the conclusion that the department succeeded in helping students to finish their studies, where otherwise the same students would fallen through the cracks in other Greek Universities. Specific recommendations are made below.

The EEAP is also of the opinion that the current curriculum of the compulsory (Υ), the compulsory elective (ΚΕΥ), and elective courses (Π), although interesting, is ``too heavy'' and, hence, needs trimming down. Specific recommendations are made below.

The EEAP also noticed that there exists significant overlap in material taught as shown in their syllabi. For example, such are the courses titled Numerical Analysis and Scientific Computing.

It is also very important to maintain as much as possible small, that is, no more than 50 students, classes. This is even more critical for the first-year courses. Due to the uncertainty about the size of the student body, planning is, of course, very difficult. The department should be prepared to show the necessary flexibility to create almost at the last-minute smaller classes. It is, of course, appreciated that such changes may be difficult to be implemented due to the lack of teaching space, as well as the need to make last minute changes to the teaching schedule of the faculty.

In addition to the size of classes, it is necessary to provide students with the opportunity to obtain better feedback about their progress while attending a class. This can be achieved by, for example, providing midterm exams and homework, which are graded. The EEAP believes that such changes will also increase the percentage of students passing each class as well as improve their grades.

The EEAP realizes that some of the recommendations that follow would be difficult to be implemented, due to the small number of faculty, the uncertainty for the number of students to remain in the program after the first semester, limited teaching space, and the lack of funding. However, the EEAP feels that, in spite these difficulties, a conscious effort should be made in this direction. All the recommendations below are internationally accepted practices and have a definite positive impact in the educational process.

The EEAP commends the department's practice for offering the diploma thesis option, as it motivates its students for original work, and of an internship.

Panel Judgement

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

Panel Recommendations

1. The course descriptions should be sent to the student at the beginning of the semester electronically.
2. At the beginning of each semester, instructors should provide the students complete and precise information about exams, homework, projects, presentations, office hours, and factors that determine the final course grade.
3. The department and the University should establish procedures for allowing students to take graduate courses.
4. The first-year classes have to be smaller, at most 50 students. Due to the uncertainties discussed earlier, it is imperative that the department and the University develop the flexibility to adjust the teaching schedule accordingly. This may require the last-minute cancellation of some more advanced classes or the ability of faculty members to teach more one semester and less another.
5. Especially for the courses during the first two years of study, the department should offer midterm exams and/or graded homework, both of which will count towards the final grade in the course. This may also improve the percentage of the students who pass the courses and the grade point average.
6. Continue the practice of the department for offering the options of diploma thesis as it motivates students for original work and of an internship.
7. Change the courses offered during the first and second semester as follows:

a) Consolidate the courses Sets and Numbers and Basic Notions of Mathematics into one as they have nontrivial overlaps and use them as a foundation course for Calculus I (Απειροστικός Λογισμός Ι).

b) Move Calculus I to the second semester. This will result to moving by one semester all the following Calculus classes as well as the Analysis 1.

c) Introduce a new and basic class about applications of mathematics during the first semester with aim to expose the students of the potential uses of mathematics.

d) Move the Informatics class from the second to the first semester.

9. Change the Numerical Analysis course from compulsory elective (KEY) to compulsory (Υ).
10. Trim (reduce) the catalogue of offered classes as follows:

a) Keep only the Analysis 1 class as a compulsory class (the course should cover the material of the first seven chapters of Rudin's "Principle of Mathematical Analysis" which is sufficient for the compulsory part of Analysis education) and rename it Analysis.

b) The current Analysis 2 class should become an elective compulsory (KEY) course and be renamed to "Measure Theory".

c) Consolidate

(i) the Geometry related courses from the list of KEY to 3, and

(ii) the Algebra related courses from the list of KEY to 3.

d) Reduce (by consolidation) from 4 to 2 the KEY courses related Didactics of Mathematics.

e) The number of courses related to the History of Mathematics should be reduced to at most 2 and become elective (Π).

11. Revise the description and the content of the courses to avoid the significant overlap of the material taught.

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 Program Compliance

Their Study Guide includes instructions on several processes and services and is made available through the department's home page.

The EEAP understands that this department and the entire University of Aegean do not have a well-defined student progression monitoring process. Despite this issue, this department's undergraduate program works sufficiently well, with a lot of support by faculty members to students. The students we met and the Alumni were very satisfied with their experience gained during their studies.

Student mobility is encouraged via the ERASMUS project, as well as the concept of Practical Training. The ERASMUS option has been under-utilized.

The practical training has been quite popular and successful according to information provided to EEAP by employers participating in the training.

The ECTS is applied across the curriculum for the sake of student's recognition and certification. This department has made serious efforts to consider student and faculty feedback, as well as the recommendations of the last external evaluation 2013. The course curriculum is adjusted to the ECTS. At present, the Diploma supplement is provided to every graduate.

After discussions with students and external partners, it was evident that the department produces graduates, who are ready to join the work environment. The practical training program is deemed very valuable and a preferred choice by many students. This experience is highly important for opening students' horizons and their future employment perspectives.

Panel Judgement

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

Panel Recommendations

1. A formal student progression monitoring method should be in place.
2. The University should create an orientation week upon student arrival in the campus or at least a well-designed First Year Student Guide providing practical information, such as familiarity with facilities, housing, and transportation.
3. Encourage the students to take advantage of the ERASMUS mobility program despite the expenses involved.
4. Maintain the popular practical training program.

Principle 5: Teaching Staff

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

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

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

Study Programme Compliance

The department faculty and its special teaching staff (EDIP) are committed to their duties. The department aims to attract and hire qualified researchers committed to teaching. Both hiring and promotions follow the criteria mandated by Greek law.

The EEAP was informed that this department does not have a budget and relies on donations from different sources to maintain the program of visitors and conferences. Obviously, this is hurting the department's efforts to promote research.

The student/faculty ratio is high for the basic courses offered during the first two years. The teaching load is compatible to the norms dictated by the Greek law.

Linking teaching with research is an important mechanism to stimulate students. Unfortunately, due to the limited funding, this is not possible in this case. The department, as described in recommendations below, should explore methods to stimulate and engage students.

Members of the department are mentoring and coaching high school students to participate in the mathematics competitions organized by the Hellenic Mathematical Society. This is an activity that enhances and strengthens the community engagement.

The current University support in the research and visibility of the young faculty promotes the department and thus, it is important to be kept. The EEAP did not observe any action in this direction by the University. Currently, there is no stable source to cover the expenses for faculty participation in conferences/workshops.

Panel Judgement

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

Panel Recommendations

1. The University and the department should support their faculty research activities. In particular, funds should be committed towards faculty conference participation, visiting other institutions, research collaborations, and preparation of research proposals.

2. The department should establish formal and rigorous procedures for documenting annual faculty progress in research and related activities, including research publications, teaching, distributing lecture notes/books to students in a course, departmental service, university service, professional service and conference participation. In particular, at the beginning of every academic year each faculty member should submit an updated CV and a 2-3 pages "yearly activities" report containing the above items. This report is then discussed by the department and the progress of its faculty members is officially recorded.

3. The department should establish "undergraduate seminar", taking place every two weeks, where the speakers could be graduate students, undergraduate students working on some research project with a professor, or faculty members.

4. The department should explore modern communication technology (Zoom, Google meets, Skype, etc.), as is the international tendency today, so that the faculty can participate in seminars and conferences organized by other Universities in Greece or abroad.

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-centered learning and the adoption of flexible modes of learning and teaching. Support activities and facilities may be organized in various ways, depending on the institutional context. However, the internal quality assurance ensures that all resources are appropriate, adequate, and accessible, and that students are informed about the services available to them.

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

Study Programme Compliance

The department is hosted in several historic buildings, spread within the town of Karlovassi. The distance among these buildings varies up to approximately two kilometres. Presently, there is no frequent public transportation to accommodate students' movement.

There are not enough offices for the mathematics faculty resulting in some of them sharing the same room. There are two large 70-seats rooms, one 25-seat room, and one for 35-seats. The classrooms are equipped with projectors and sliding blackboards. There is no amphitheatre. Large lectures (of more than 70 students) take place in a conference hall provided by the municipality. This room is not appropriate for teaching.

The EEAP recognizes that these limitations, which are beyond the department's responsibility, should be addressed by the University and the State. It is our understanding that planning for a new campus is ongoing for several years.

There is an extensive mathematical departmental library, but the space for student study is limited.

The department has its own computer lab with 36 computers, main-frame server, and a teleconference room. Unfortunately, due to the limited funding, the department does not have sufficient number of licenses for some software programs (e.g. MATLAB) which are necessary for

the educational mission. The number of licences should reflect the number of students and not the number of seats in the labs.
A wide range of support services is available to students, including dormitories, cafeteria, and counselling services. EEAP understanding is that the University has very limited facilities for students with disabilities. EEAP was informed that the administrative support is very competent and dedicated.

Panel Judgement

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

Panel Recommendations

1. The building infrastructure requires maintenance, modernization, and appropriate teaching space. Improving facilities for disabled students should be priority. The University should address all of the above issues urgently.

~~3.~~2. The department should be given additional funding to obtain sufficient number of licensed software programs for teaching and research.

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 organization, 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 analyzing information on study programmes and other activities feed data into the internal system of quality assurance.

The information gathered depends, to some extent, on the type and mission of the Institution. The following are of interest:

- *key performance indicators*
- *student population profile*
- *student progression, success and drop-out rates*
- *student satisfaction with their programme(s)*
- *availability of learning resources and student support*
- *career paths of graduates*

A number of methods may be used for collecting information. It is important that students and staff are involved in providing and analyzing information and planning follow-up activities.

Study Programme Compliance

The department has established satisfactory procedures for the collection of data about teaching methods, teaching progression, gender composition of the student body and other items related to undergraduate education. Information regarding students that follow teaching and academic paths is fairly complete. However, data about the employability in other areas is limited.

It is evident that the department pays considerable attention to student surveys, although the completion rate of student surveys is very low. The results impact in the quality of teaching. The department could explore creative ways to encourage students to participate in the process in larger numbers.

Panel Judgement

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

Panel Recommendations

1. The department should utilize and strengthen its relationship with the existing Alumni to develop efficient mechanisms for the collection of data regarding the employment and carrier paths of its former students.

~~3.~~2. Take concrete steps to increase the student response to the teaching evaluation. One possibility is to make the completion of the questionnaire mandatory. For example, the students cannot see their grades until they participate in the surveys, with the option of abstaining.

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

This department's website contains information about its facilities, staff, undergraduate and graduate programs, announcements, events, policy of quality assurance, and internal assessment reports. The website is available in Greek and English, although the later contains more information than the former, and is user friendly. However, the EEAP observed that several faculty members do not have a personal webpage.

Panel Judgement

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

Panel Recommendations

1. The department should require that each faculty member maintains an up to date uniform basic CV containing information about education, employment, scientific interests, courses taught and resources developed, list of grants, collaborations, conference organization and participation, departmental and professional service, and a complete list of publications.

~~3.~~2. The department's webpage should have an up to date undergraduate and graduate studies information (in Greek and in English) reflecting the most recent changes in the curriculum.
Every student should be given a condensed (at most 10-pages), up-to-date, outline of the program of study.

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 analyzed and the program is adapted to ensure that it is up-to-date. Revised programme specifications are published.

Study Program Compliance

Since the 2013 review, the then Department of Mathematics was divided again into a Department of Mathematics and a Department of Statistics and Actuarial and Financial Mathematics.

The newly formed Mathematics Faculty self-assesses its undergraduate program on a regular basis and in a meticulous way. The learning resources and support services are equally well monitored. A serious effort has been made to simplify and streamline the undergraduate program in accordance to the recommendations of the 2013 external review but, as indicated earlier, much more needs to be done in this direction.

The current program accommodates internationally established norms for mathematical training. In addition, the department takes appropriate action for their improvement, whenever the need arises.

The MODIP oversees the overall process.

The EEAP applauds the department for its rigorous monitoring and urges a continuation of these sound practices.

Panel Judgement

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

Panel Recommendations

Nothing specific besides keep up with the good work.

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 realized 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 Program Compliance

To the EEAP's knowledge, this is the first external evaluation review of the undergraduate program in the Department of Mathematics at the University of Aegean. There was an external evaluation review in 2013 for the then Department of Mathematics, which consisted of two separate tracks, namely Mathematics and Statistics and Actuarial-Financial Mathematics.

Both the EEAP and the 2013 external review found that the mathematical education in the Department of Mathematics at University of Aegean is very good. The efforts of the faculty should be applauded. Indeed, in spite of the many difficulties discussed earlier in the report, the Department is doing very well in establishing the University of Aegean as a choice for students of Higher Education.

As indicated in other parts of the report, the procedure of verifying the quality of academic education both at the department and the University is very rigorous and done meticulously. The EEAP was impressed by the dedication of the faculty and staff to student learning and education.

The input to the EEAP from current students, alumni, and partners was very positive. In particular, they strongly indicated that their mathematical studies were sound, thorough and prepared them in an excellent way to be competitive in academia and industry.

All the stakeholders, including lab personnel and administrative staff, appreciated the significance of the external review and were excited to participate, help and contribute to the success of the process.

The EEAP is of the opinion that the entire faculty was open to constructive suggestions from external friends, collaborators, and external evaluators.

The EEAP was also impressed by the effectiveness of the monitoring mechanism and personal involvement of the faculty and recommends that the department continues the rigorous process of self-evaluating.

Panel Judgement

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

Panel Recommendations

Continue with the very good work.

PART C: CONCLUSIONS

IV. Features of Good Practice

The EEAP feels that the following points are well addressed by the department:

- The department's faculty is dedicated.
- The study guide is informative, although it needs some work.
- The faculty maintains close mentoring relations with the students.
- The notes of some courses are very good.
- Student feedback and comments are taken seriously into account.

V. Areas of Weakness

The EEAP feels that the roots for many of the shortcomings are due the severe underfunding and the ever-changing entrance criteria to the department.

- Lack of funding to promote research and teaching activities.
- Lack of timely information about the size and the composition of entering class each year.
- The students need more information and feedback during the semester about their progress in each class especially the first two years of studies.
- The curriculum for the program of the first semesters is not aligned with the level of students.
- There are overlapping and, in some cases, unnecessary courses in the curriculum
- No apparent integration between teaching and research

VI. Recommendations for Follow-up Action

The EEAP strongly recommends that the following be immediately addressed-the specific can be found in the recommendations made in this report.

- Revision of the curriculum and the course offerings as recommended
- Incorporation of mid-term exams and projects, in addition to the final exams, to assess and evaluate the performance of students in all classes
- Strengthening the connections with alumni and social partners
- Incorporation of novel technology in research activities
- Faculty should provide an annual report and maintain an up to date as recommended

VII. Summary & Overall Assessment

The Principles where full compliance has been achieved are: 1, 2, 4, 7, 9, 10

The Principles where substantial compliance has been achieved are: 3, 5, 6, 8

The Principles where partial compliance has been achieved are:

The Principles where failure of compliance was identified are:

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

The members of the External Evaluation & Accreditation Panel

Name and Surname **Signature**

1. **Prof. Alekos Vidras (Chair),** University of Cyprus, Nicosia, Cyprus
2. **Prof. Nikolaos Dimakis,** University of Texas Rio Grande Valley, Texas, USA
3. **Prof. Panagiotis Souganidis,** The University of Chicago, Chicago, Illinois, USA
4. **Prof. Nikolaos Stylianopoulos,** University of Cyprus, Nicosia, Cyprus