



**ΕΛΛΗΝΙΚΗ ΔΗΜΟΚΡΑΤΙΑ**  
HELLENIC REPUBLIC



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

**Electrical and Computer Engineering**

**Institution: Technical University of Crete**

**Date: 21 January 2023**

Report of the Panel appointed by the HAHE to undertake the review of the Undergraduate Study Programme (Integrated Master) of **Electrical and Computer Engineering** of the **Technical University of Crete** 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 (Integrated Master) of **Electrical and Computer Engineering** of the **Technical University of Crete** comprised the following five (5) members, drawn from the HAHE Register, in accordance with Laws 4009/2011 & 4653/2020:

- 1. Prof. Nicolas Tsapatsoulis (Chair)**  
Cyprus University of Technology, Cyprus
  
- 2. Prof. Emeritus Nicolas Spyrtos**  
Université Paris Saclay, Paris, France
  
- 3. Prof. Costas Iliopoulos**  
King' s College London, United Kingdom
  
- 4. Mr. Ioannis Selimis**  
Technical Chamber of Greece, Greece
  
- 5. Mr. Michail Voskakis**  
Hellenic Mediterranean University, Heraklion, Greece

## II. Review Procedure and Documentation

On January 4, 2023, the External Evaluation and Accreditation Panel (EEAP) was granted electronic access to the relevant accreditation proposal and support material from HAHE. On January 7, 2023, the HAHE General Director, Dr Christina Besta, conducted a virtual training over Zoom for the panel members.

On Tuesday, January 17, 2023, 16:00:18:00, the EEAP members virtually met over Zoom. During that meeting the accreditation proposal report, submitted by the School, was discussed. In addition, allocation of tasks for the panel members was made and questions for clarifications were discussed.

On Tuesday January 17, 2023, 18:30:19:15 a teleconference with the Vice-Rector/President of MODIP, Associate Professor Fotios Kanellos, and the Dean of the School, Prof. George Karystinos, took place. During that meeting an overview of the Undergraduate Program (UP): history, academic profile, current status, strengths and possible areas of concern were presented. In addition, useful information about the Technical University of Crete and the enrolled students in the School's undergraduate and postgraduate students were presented.

A teleconference with OMEA & MODIP representatives and MODIP staff followed at 19:15 - 21:30. That meeting was attended by the OMEA members Prof. Eftychios Koutroulis, Prof. Athanasios Liavas and Associate Professor Vassilis Samoladas, the MODIP members Prof. Michalis Doumpos, Associate Professor Ioannis Tsaras and Dr. Nikolaos Spanoudakis (Laboratory Teaching Staff), and the Secretary of MODIP, Ms. Andriani Lyroni. During this meeting the degree of compliance of the UGP to the Quality Standards for Accreditation was presented. A review of student assignments, theses, exam papers & examination material was also discussed. Presentations were well prepared and focused and triggered useful discussion afterwards.

The day was concluded with a short debriefing among EEAP members in a private Zoom meeting. There, the panel reflected on impressions and got prepared for the second day of the on-line review. Based on the information received by the School it was judged that an on-site visit by a panel member would be of great value in a meaningful evaluation of the available facilities and laboratories of the School. Mr. Michail Voskakis, the student member of EEAP, graciously volunteered to travel to Chania and have an on-site visit on the 3rd day of the review.

On Wednesday, January 18, 2023, the External Evaluation & Accreditation Panel review started with a teleconference with teaching staff members. The following faculty members attended the meeting: Prof. Minos Garofalakis, Prof. Euripides Petrakis, Prof. Thrasyvoulos Spyropoulos, Assoc. Prof. Nikolaos Bekiaris-Liberis, Assoc. Prof. Konstantinos Gyftakis, Assoc. Prof. Sotirios Ioannidis and Assist. Prof. Nikos Giatrakos. The meeting was also attended by the following Laboratory Teaching Staff: Dr. Nektarios Moumouzis, Mr. Stamatis Andrianakis, and Mr. Nektarios Gioldasis.

During that meeting the following matters were discussed: Professional development opportunities for the teaching staff, teaching staff and student mobility opportunities, staff

workload (including admin duties), student evaluation methods, approaches for student-centered learning, competence and adequacy of the teaching staff to ensure learning outcomes, links between teaching and research, teaching staff's involvement in applied research projects and research activities directly related to the UGP, possible areas of weakness. The time allowed for that meeting was too short and as a result the session continued and overlapped the next session.

A teleconference with undergraduate students followed. The discussion focused on the learning experiences of the students, their satisfaction with the programme and the learning outcomes, their participation in the quality assurance processes including evaluation of individual courses and teaching staff, their involvement in the programme redesign and or adjustment, their view regarding the internship program, their participation in the Erasmus+ mobility program, the opportunities they have to access high-tech research labs of the School, the student support including the facilities of the TUC campus. The EAAP members were impressed by the maturity of the students, their critical view and their willingness to help improving the UGP. They offered valuable information on the quality assurance processes and their evaluation of students' life and welfare. As in the previous case the time allowed for that meeting was extremely short and despite the very fruitful discussion the EEAP had with the students the Chair had to stop the meeting to keep up with the time schedule.

The next session (Wednesday, January 18, 18:30-19:15) was devoted to an on-line tour of teaching and research labs. Very useful, concise, and informative presentations were given by the directors of the labs as well as from laboratory assistants. The EEAP members verified that a strong point of the UGP is the ability to effectively link research with studies.

A short discussion with the Secretary of the School Ms. Vasiliki Grigoraki also took place during that session. The emphasis was on the students' support, the electronic services offered to students to monitor their progress through the program and the way questionnaires, for the modules' evaluation, are circulated, collected, processed, analysed and stored.

A teleconference with employers/social partners followed. In that meeting the following people participated:

- Alexandros Apostolidis, EPO program manager, Sword Group – Greece
- Michalis Argyriou, Business Unit Deputy Director / Head of Development & Architecture, Sword Group – Greece
- George Dimitropoulos, CEO, Adveos, Greece
- Domniki Kavatziki, Senior HR Manager, Deloitte Greece
- Anastasios Kokkinis, Director, Software Development Connectivity Group, Renesas Design Greece
- Manolis Pitarokilis, Technical Manager, European Dynamics, Greece
- Riccardo Russo, Partner, Deloitte Italy
- Ioannis Sarris, Director of Technology, Adveos, Greece
- Spyros Sofianos, Technical Chamber of Greece - Branch of Western Crete, Greece

During that meeting the relations of the School with the external stakeholders from the private and the public sector were discussed. Special attention was given to the experience the external stakeholders have with UGP graduates and / or UGP students during their internships for practical training. It turned out that most of the collaborations of the School with the external stakeholders is rather recent and overlapped with the COVID pandemic period. As a result, no experience with UGP students doing their internship was reported, despite that most of the employers expressed their willingness to offer internships.

Overall, the information the EEAP gained, about the UGP, from that meeting was quite limited. Most external stakeholders cooperate with the School in terms of R&D projects and for School publicity purposes. Those of them that employ UGP students seem very satisfied and acknowledge the good work done by the School, especially in linking studies with research.

A teleconference with graduate students followed (Wednesday, January 18, 20;20-21:15). The following UGP graduates attended the meeting:

- Dr. John Kimionis, Member of Technical Staff, Nokia Bell Labs, Murray Hill, NJ, USA
- Mr. Athanasios Delatolas, Ph.D. Student, Technical University of Denmark, Copenhagen, Denmark
- Mr. George Margaritis, Ph.D. Student, Massachusetts Institute of Technology, Cambridge, MA, USA
- Mrs. Dimitra Kyriakou, M.Sc. Student, Technical University of Crete, Chania, Greece
- Mr. Georgios Kotridis, Wireless Communications Engineer, Technology team (R&D), Adveos, Greece

The discussion focused on the learning experiences they had during the studies, their overall satisfaction with the programme, the competitiveness of their acquired qualifications regarding employment and / or post graduate studies, their assessment of the UGP and possible strong and weak points, their participation in the quality assurance processes and especially their involvement in the programme redesign and or adjustment. The EEAP members were impressed by the career path of most of the graduates they virtually met, especially for those that follow a research-oriented career. Even though most of the graduates that participated in the meeting continue their studies or follow a research career path, the information gained about the UGP program during that meeting was extremely valuable. The EEAP appreciated the maturity of the students, their positive thinking, and their willingness to help improve the UGP as well as the employability or study opportunities of the new UGP graduates. A specific step towards this aim is the foundation of an alumni association which could formally relate with the School. The EEAP members believe that the UGP graduates are an asset for the School and they could help the School on a variety of actions, in addition to the improvement of the UGP (which is a must).

The time allowed for that meeting was also limited and despite the very constructive discussion the EEAP had with the graduates the Chair had to stop the meeting due to the late time.

The day was concluded with a private debriefing session among the EEAP members. There, the panel reflected on impressions received during the second day, discussed the main findings, investigated possible missing information and / or clarifications required from the School so as to create a full picture of the UGP, and agreed about the feedback that would be given to the OMEA & MODIP members, the Dean and the Vice Rector the day after.

The final (teleconference) meeting took place on Thursday, January 19, 16:00-16:45 with the OMEA & MODIP representatives. The following OMEA & MODIP members participated: Prof. Eftychios Koutroulis, Prof. Athanasios Liavas, Associate Professor Vassilis Samoladas (OMEA members), Prof. Michalis Doumpos, Associate Professor Ioannis Tsaras, Dr. Nikolaos Spanoudakis (MODIP members), and the Secretary of MODIP, Ms. Andriani Lyroni. In that meeting, the EEAP members had the opportunity to ask for any missing information and clarifications about some of the findings. Then the Chair of the EEAP gave initial feedback about the key findings the panel identified and a fruitful discussion with the OMEA & MODIP members took place.

A closing meeting with the Vice-Rector/President of MODIP, Associate Professor Fotios Kanellos, the Dean of the School, Prof. George Karystinos, and the OMEA & MODIP representatives (mentioned above) took place on Thursday, January 19, 16:45-17:30. This was an informal presentation and discussion of the EEAP key findings. In general, the School is doing an excellent job in some aspects of the UGP, such as the linking of studies with research and their ability to consolidate students' feedback for the UGP improvement, while for some other aspects, such as the mobility of students and staff and the value given to the internship program, there is room for improvement. The submitted documentation was quite well prepared and the information provided therein, is in most cases to the point and what is needed to evaluate the UGP. The panel asked for some more documentation that they needed to accurately reflect their findings, thanked the School and the University for their hospitality and encouraged them to continue the good work they are doing.



### III. Study Programme Profile

The School of Electrical and Computer Engineering (ECE) is one of five Engineering Schools of the Technical University of Crete. It was founded in 1990 and as of January 2023 from the UGP graduated 1656 Electrical and Computer Engineers. The ECE School is housed in the TUC campus, along with the other four engineering schools. The TUC Akrotiri Campus is on 700 acres of land, 7km North-East of Chania town, near the village of Kounoupidiana. The School Registrar's office, the School Administration building and the faculty and staff offices are at the School building clusters in the Akrotiri campus, where also the classes and laboratories are held. The School employs 28 Faculty members, many of whom have completed their PhD studies in prestigious universities worldwide while a few of them have worked abroad before joining the School. The School also employs 23 Scientific Staff members and two Administrative Staff members and welcomes approximately 200 students every new academic year. School facilities include 11 officially accredited research and teaching labs, while an average of external funding of 2ME per year is secured via competitive national and international grants. The School is divided into four research divisions: Division of Electronics and Computer Architecture, Division of Informatics, Division of Energy and Systems and Division of Telecommunications.

The UGP aims at the education and high-level technical training of engineers in modern technology subjects found in the fields of IT, electronics and computer architecture, telecommunications, electric energy systems, and automatic control systems. Its purpose is for the students to acquire the necessary theoretical knowledge which will allow them to understand in depth the fundamental principles of new technologies in all the above areas, so that they can adapt and easily follow any new developments in any sector. The UGP graduates can acquire the rights of an Electrical Engineer after graduation by following the national processes for that purpose.

The UGP is an integrated master of 5-year studies organized into 10 semesters. The 10th semester is dedicated to the diploma thesis which is worth 30 ECTS. The student load is limited to, at most, six courses (modules) per semester. To acquire the diploma, the students must successfully:

1. Complete 33 mandatory courses. Most of them are in the lower semesters (up to the third year of studies).
2. Complete 16 elective (restricted) courses. Most of them are in the higher semesters (4th and 5th year).
3. Complete a diploma thesis
4. Credited a minimum of 300 ECTS.

Grading in all courses and the diploma thesis is in the 0-10 scale in 0.5 quanta. Successful completion of a course requires a minimum grade of five. The GPA is computed as a weighted (based on the ECTS units of each course) average of the grades in each successfully completed course and the diploma thesis. The English language and any free elective courses do not count on the computation of GPA.

The UGP does not include specific specializations but the students, in the higher semesters, can organize their study path based on their personal interests. Prerequisites and suggested courses are set whenever needed to secure smooth student progression through the UGP and to guarantee a minimum quality of learning outcomes for all students attending a specific module. There is also the option of taking practical training with the industry (internship) in the 6th, 7th and 8th semester. Each internship session carries five (5) ECTS but those ECTS do not count for the 300 ECTS that are required for graduation.

The University in general and the School in particular have all the necessary facilities for a positive learning experience for the students like housing, libraries, study halls, cafeteria, gyms, medical facilities, and support for students with disabilities.

## 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 FULFILLMENT 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 organisation 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).*

#### Relevant documentation

- *Standards for Quality Accreditation of Undergraduate Programmes*
- *Section 1 of the submitted proposal for accreditation (B1 Πρόταση ΠΠΣ ΗΜΜΥ.pdf)*
- *Quality Assurance Goals for the UGP (B6 Στοχοθεσία.pdf)*
- *Quality Assurance Policy of the Institution<sup>1</sup>*
- *Quality Assurance Policy of the School<sup>2</sup>*

#### Study Programme Compliance

##### I. Findings

The quality assurance policy of the School includes the necessary procedures to ensure the appropriate structure and organization of the curriculum through coordinated procedures and the achievement of the necessary learning outcomes and professional qualifications, according

<sup>1</sup> <https://www.tuc.gr/index.php?id=13209>

<sup>2</sup> <https://www.ece.tuc.gr/index.php?id=17730>

to European and national standards. For the implementation of that quality assurance policy, the School applies the *Quality Manual of the Internal Quality Assurance System* of the Technical University of Crete<sup>3</sup>. In addition, the Undergraduate Curriculum of the School of ECE undergoes periodic external evaluation by committees of independent experts, according to certification procedures organized by the Hellenic Authority for Higher Education.

Regarding the implementation of the quality assurance policy, as far as the UGP, is concerned the EEAP found the following:

- The structure and the organization of the curriculum is monitored by both the Dean and the General Assembly of the School at least once a year. Participation of students in that process is not guaranteed. So far this was not due to the responsibility of the School but due to the failure of students to define representatives for the GA.
- There is no provision for the participation of external stakeholders and graduates in that process either. On the positive site, the School has appointed an external Advisory Board which can provide helpful assistance in the revision of the UGP.
- The UGP is fully consistent with the European and National Qualifications Framework for Higher Education. The course (module) syllabi follow a standardized template which is fully compatible with the ECTS. The syllabi are checked by the Dean of the School and the OMEA members.
- The main measure to evaluate the quality of teaching is through the questionnaires submitted by the students for each module they attend. Remedy measures for deviation cases are not foreseen though. In addition, questionnaires' circulation, submission and processing seem to be manually done.
- The appropriateness of qualifications of faculty and teaching staff is secured through open hiring procedures and merit-based recruitment, evaluation, and promotion according to the national laws. Inviting possible candidates for open lectures is a good practice and could be added in the corresponding quality assurance process.
- The IQAS promotes quality, instead of quantity, in the research work of the ECE School members while securing competitive - at the international level - grants, awards, and distinctions is encouraged.
- Interconnection of teaching, research, and innovation is promoted by the seamless access of students to the teaching and research labs and by promoting research-targeted diploma theses, which in some case lead to publications in prestigious scientific journals
- There is no clear provision in the quality assurance policy which ensures that the acquired qualifications by the UGP graduates meet the needs and demands of the Greek and international job market. Involvement of graduates and external stakeholders, such as employers, in an annual curriculum evaluation could help towards this direction. The surveys conducted by the Liaison and Career Office provide also important information and should be formally established on a regular basis. Thus, the role of the Mediation and Career Office in this quality goal must be clearly mentioned in the IQAS and the Quality Manual.

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<sup>3</sup> <https://www.tuc.gr/index.php?id=13209>

- There is no clear provision in the IQAS for a formal evaluation, by the students, of the quality of support services such as the administrative services, the Library, and the student welfare office. The same also applies *for the evaluation* of the quality of infrastructure, services, processes, and tools that support learning and academic activities, so that students are offered a top level of study. The services and support are indeed there but we are talking about evaluation processes so as their quality is affirmed.

## II. Analysis

The Internal Evaluation Committee (OMEA) is responsible, in collaboration with the University's Quality Assurance Unit (MODIP), for overseeing the quality assurance processes of the School and for evaluating the effectiveness of the entire academic provision. The General Assembly of the School, along with the Dean, maintain overall responsibility for reviewing the UGP and ensuring its adherence to the institutional Quality Assurance standards.

The program of study receives student scrutiny at the end of each semester in the form of student evaluation questionnaires for each course. In addition, a global questionnaire is given to the students both at the beginning of their studies as well as immediately after their studies' completion. The establishment of an external Advisory Board is also a plus. However, during the meeting with the external stakeholder and the graduates it became apparent that there is neither formal nor informal role for them in the IQAs for the assessment of the curriculum.

During the meeting with the students, it was found that modules' evaluation is done via hard-copy questionnaires and not for all modules (some elective courses seem to be missing evaluations). On the positive side, students affirmed that their qualitative feedback (comments) in the questionnaires is taken seriously into account and remedy measures apply whenever possible.

Finally, faculty are research active and seek to incorporate their research into their teaching, to the extent of publishing papers with students and involving them in running lab sessions. This is seen as further evidence of supporting the students in their pursuit to acquire as many relevant skills as possible which would enable them to secure good graduate employment positions.

## III. Conclusions

Several weak points of the quality assurance policy, as far as the evaluation of the UGP, were identified and need to be attended by the Dean, the OMEA and the General Assembly of the School (see also the recommendations below). However, most of them refer to the modification and practical application of the quality assurance processes rather than actual deviations that could negatively affect the UGP per se.

## Panel Judgement

Principle 1: Academic Unit Policy for Quality Assurance	
Fully compliant	
Substantially compliant	<b>X</b>
Partially compliant	
Non-compliant	

## Panel Recommendations

- Overall, the Quality Assurance Policy of the School, as far as the UGP is concerned, must be more specific and must include clear and practically applicable processes.
- The Quality Assurance Goals for the UGP should focus on the UGP, not on research performance. Goals related to research achievements (such as Goals 5-11 in B6) can be set as Quality Assurance Goals for the School. In that respect, Quality Assurance Goals directly related to UGP could be increased. The QAG #3 and the corresponding KPI is a very clear example towards this direction.
- Participation of students in the annual assessment of the curriculum must be ensured.
- A provision for formal involvement of external stakeholders and/or graduates in the annual assessment of the curriculum should be added in the Quality Assurance Policy of the School.
- The external Advisory Board can be extended to include industry people. In any case their feedback about the UGP shall be regularly sought for.
- The assessment of the individual courses by the students through questionnaires should be done electronically. This will allow efficient processing of the gathered information and will increase students' participation. A specific provision for that must be added in the Quality Assurance Policy of the School.
- Specific remedy measures accounting for quality deviations regarding teaching must be also added in the Quality Assurance Policy of the School.
- Inviting possible faculty candidates for open lectures is a good practice and could be added in the corresponding quality assurance process.
- The role (e.g. conducting surveys of the UGP graduates on a regular basis) of the Liaison and Career Office in the assessment of the quality goal that refers to the acquired qualifications by the UGP graduates should be clearly mentioned in the IQAS and the Quality Manual.
- The evaluation by the students of the quality of infrastructure, services, processes, and tools that support learning and academic activities must be included as a distinct process in the Quality Manual. The same also applies for the quality of support services such as the administrative services, the Library, and the student welfare office.

## 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*

### Relevant documentation

- *Standards for Quality Accreditation of Undergraduate Programmes*
- *European Qualifications Framework*
- *Section 2 of the submitted proposal for accreditation (B1 Πρόταση ΠΠΣ ΗΜΜΥ.pdf)*
- *Program Guide<sup>4</sup> (B3 Οδηγός Σπουδών.pdf)*
- *Regulations for undergraduate studies (B4 Κανονισμοί.pdf)*
- *Quality Assurance Goals for the UGP (B6 Στοχοθεσία.pdf)*
- *Summary of Student Evaluations - Calendar Year 2019 (B7 Αξιολόγηση από τους φοιτητές Σχολής ΗΜΜΥ.pdf)*
- *Minutes of MODIP meeting(s) (B8 Πρακτικό ΜΟΔΙΠ.pdf)*
- *Data submitted to the Integrated Information National Quality System (ΟΠΕΣΠ) for the academic years 2015-2016, 2016-2017, 2017-2018, 2018-2019 and 2019-2020 (B9 Δεδομένα ΟΠΕΣΠ.pdf)*
- *Annual Activity Reports (B10.6 Annual Activity Reports 2010-2021.pdf)*
- *Questionnaire for course (module) evaluation (B10.7 Φόρμα αξιολόγησης μαθημάτων.pdf)*
- *Example of an Academic post advertisement (B10.8 Open Call for Faculty Positions.pdf)*

<sup>4</sup> <https://www.ece.tuc.gr/index.php?id=4499>

## **Study Programme Compliance**

### **I. Findings**

As mentioned in the previous Section the participation of students in the UGP design is not ensured. Similarly, there is no provision in the IQAS for the official involvement of external stakeholders and graduates in the UGP design, assessment and amendment. The panel, during the review, did not find any evidence that this happens even informally.

In terms of the UGP implementation, the panel considers that UGP has well defined objectives and follows well-established national and international practices. It is comprehensive and focused, with a sensible balance of fundamental and applied learning outcomes. The overall structure and content of the programme is like other well-established programs in Europe and North America. Distinctive characteristics of the programme are the presence of prerequisites, the large number of elective courses offered and the choice of integration rather than the addition of specializations in the higher semesters. Despite that, through the proper choice of elective courses students can formulate their own specialization portfolio. An obstacle to that is that not all electives are available every year due to the lack of personnel or specialized personnel.

A major issue is that some classic areas of the field of Electrical Engineering, such as Power Systems and Energy Production and Transmission are quite suppressed in the programme. This is mainly due to the lack of faculty specializing in those fields but a better planning of personnel hiring could be definitely done. Both students and graduates with a major in Electric Power, expressed their concerns regarding the lack of skills of graduates in that sector, and wondered whether an ECE graduate can be assigned the title of Electrical Engineer by attending only two Energy related courses (Electric Power Systems) and falling short in additional compulsory courses such as Electric Machines, High Voltage Systems, Systems and Circuits Design (CAD related courses), Electric / Industrial Installations, Drive Systems, Energy Systems / Photonics, Lighting Technology, Lightning Protection and Grounding, etc.

There is a clear osmosis between research and teaching which is highly commendable. The School has established a formal teaching staff advisor (one per semester) to assist students in their studies. The School has also put in place a high level international advisory board which benefits greatly to its international image.

The programme is compliant with the ECTS system. However, the School does not take full advantage of the opportunities offered by the Erasmus programme for student mobility; only a few actions have started very recently (in the last two years) towards this direction. All course syllabi and the undergraduate course catalogue are rigorous; they are published on the department's website and provide clear information on course structure and learning outcomes. The teaching staff set clear expectations on the courses and clarify the course assessment methods at the beginning of each academic term.

The UGP is effectively supported by secretarial services and modern technical infrastructure. One factor that may affect the quality of the UGP is the high student to staff ratio (not very high compared to other programs in Greece though) which originates from the difference between the number of new students proposed by School and the actual number of students registered



in the programme. This forces the School to repeat the teaching of certain lab sessions several times. However, it is understood that the School has no control on this issue.

For its continuous improvement the programme benefits from linking and integrating teaching staff research activities and from feedback received from several internal sources; namely student questionnaires. However, feedback from external sources such as the alumni and employers seems to be totally missing.

During its meeting with students, the panel felt that the students are highly satisfied by the overall atmosphere in the School and the support and guidance they receive from their instructors. They indicated that the teaching staff are helpful and always available when students need advice or assistance in their studies. Teaching staff appear to care for and work closely with students to help them grow and succeed. The students also indicated that in several cases their work for the diploma thesis has led to publications in conferences and scientific journals. They also mentioned and praised the existence of a Student Support Centre. Finally, they mentioned that the importance of practical training via internships must be upgraded, by allowing the ECTS received for the internships to count on the required ECTS units for graduation, and the internship period should be extended to three months. They also complained that certain elective courses while present in the Program Guide have never been offered so far, and some others are not offered on a regular basis.

## **II. Analysis**

An important source of feedback for monitoring and improving quality is student questionnaires. The panel was informed that the questionnaires, for individual course evaluation, are filled in the classroom and participation from students, frequently present in lectures, is quite high. However, the panel found that the questionnaires are in paper form something rather surprising as this hardly contributes to the protection of personal data and might even be fraud prone.

Two other important sources of feedback for monitoring and improving quality of the program comes from external stakeholders and alumni. However, this feedback process is rather ad-hoc, based on personal contacts among teaching staff and external stakeholders. During its meeting with alumni, the panel was pleased to hear they were extremely satisfied by the quality of education they received and the overall atmosphere in the School. The alumni also pointed out the good work done for linking teaching with research which let them follow a research-oriented career path very easily. They were quite enthusiastic about a possible establishment of an alumni association although they were rather reluctant in taking the initiative (mainly because of the work involved). The School should urgently take the initiative to establish the alumni association and allocate appropriate resources for its proper functioning. It is the view of the panel that the School in general and the UGP in particular will highly benefit from such an association, in terms of publicity, international image, graduates' employability and post graduate studies, and off-course for the UGP assessment and amendment.

During its meeting with industrial stakeholders the panel was informed with pleasure that they are eager to establish an Advisory Board to give feedback to the School regarding the structure and content of courses, propose internships to students and even collaborations with staff in the context of projects. The School should seek the establishment of such a board comprising permanent teaching staff, external stakeholders from the industry and alumni.

Establishing a network comprising the Alumni Association and the Advisory board of external stakeholders would help faculty and especially students link to professional networks nationally and internationally and benefit the overall visibility and reputation of the School.

### III. Conclusions

Several weak points impacting both the design and the implementation of the UGP were identified and need to be attended by the School (see also the recommendations below). However, the panel is convinced that, given the enthusiasm and professionalism of the faculty and other teaching staff, these points can be easily addressed in the very near future.

#### Panel Judgement

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

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

#### Panel Recommendations

- The part of the UGP covering the areas of Power Systems and Energy Production and Transmission must be significantly enriched. Better planning of future faculty posts could ensure this in the long term.
- The School should strengthen their links with the local industry for the benefit of the UGP students and graduates.
- Please try to automate the questionnaire circulation, submission and processing as much as possible, especially avoiding student answers and comments on paper forms.
- Take the initiative in establishing an Alumni Association and an External Advisory Board comprising professional stakeholders, including alumni.
- Make better use of the opportunities offered by the Erasmus+ for student and staff mobility.
- Consider upgrading the importance of Internship by letting a limited number of ECTS, maybe 10, to count for the ECTS required for graduation. Furthermore, please consider extending, significantly, the duration of internships.

### 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.*

#### Relevant documentation

- *Section 3 of the submitted proposal for accreditation (B1 Πρόταση ΠΠΣ ΗΜΜΥ.pdf)*
- *Program Guide<sup>5</sup> (B3 Οδηγός Σπουδών.pdf)*
- *Courses' description - syllabi (B5 Περιγράμματα Μαθημάτων ΠΠΣ ΗΜΜΥ.pdf)*
- *Regulations for undergraduate studies (B4 Κανονισμοί.pdf)*
- *Regulation for addressing complaints<sup>6</sup>*
- *Summary of Student Evaluations - Calendar Year 2019 (B7 Αξιολόγηση από τους φοιτητές Σχολής ΗΜΜΥ.pdf)*
- *Data submitted to the Integrated Information National Quality System (ΟΠΕΣΠ) for the academic years 2015-2016, 2016-2017, 2017-2018, 2018-2019 and 2019-2020 (B9 Δεδομένα ΟΠΕΣΠ.pdf)*
- *Annual Activity Reports (B10.6 Annual Activity Reports 2010-2021.pdf)*

<sup>5</sup> <https://www.ece.tuc.gr/index.php?id=4499>

<sup>6</sup> <https://www.ece.tuc.gr/index.php?id=17661&L=52>

- *Questionnaire for course (module) evaluation (B10.7 Φόρμα αξιολόγησης μαθημάτων.pdf)*

## **Study Programme Compliance**

### **I. Findings**

The UGP has undergone a significant redesign towards student-centered learning from the academic period 2020 - 2021 onwards. The major changes made are summarized below:

- Reduction, to a maximum of three, the length of every chain of prerequisite courses in the UGP
- All prerequisite courses are offered up to the 6th semester. Courses that are offered in the Fall semester have prerequisites that are also offered in the Fall semester. The same also applies for the courses offered in the Spring semester.
- There is a plurality of electives without field-based choice restrictions (electives are open to all). This enables students to tailor their specialization to their interests more easily and effectively.
- Students can enrol, in a limited number of courses during their studies, to courses offered at higher semesters. They can also enrol in (up to 2) postgraduate courses.

The basic principles of student-centered learning are accommodated via projects tailored to students' interests and strengths mainly in elective courses in the higher semesters. Overall, the teaching staff is quite acquainted with student centered learning and tries to apply it as much as possible. Most UGP courses are designed in a way that promotes mutual respect in the student - teacher relationship while a formal procedure for student appeals is included in the IQAS.

Expected learning outcomes per course as well as grading is announced by the instructor(s) at the first lecture of the course, and they are posted on the LCMS. Learning outcomes are also stated clearly in the course description and the Program Guide.

Students' feedback regarding learning content, delivery modes and assessment methods, is collected by a properly designed questionnaire. All courses, at the end of each semester are subject to an anonymous, written evaluation, which gives the Dean insight into the smooth running of the course(s). Instructors are then informed for students' evaluation and comments to improve the effectiveness of their teaching approaches. In the questionnaire there is enough space for the students to provide quality comments spanning six different axes (teaching effectiveness of the instructor and the lab assistants, learning content, students' load, students' contact hours, coursebook(s) and other instruction assistance tools).

The School fully supports students and staff with disabilities, where appropriate and feasible, by properly designed classrooms, with counselling and special provision for laboratory exercises, etc.

## II. Analysis

Regarding the course delivery modes, the School has developed and has been running its own LCMS (Learning Content Management System) for more than 15 years<sup>7</sup>. This system has been extensively used (more than 3200 total users and 141 different courses). Recently, the School has migrated to "e-class" LCMS<sup>8</sup> which offers extended capabilities. The entirety of UGP courses make extensive use of those LCMSs. In addition, learning material is shared via external content delivery platforms (e.g. YouTube) using specific channels<sup>9</sup> and through social media (e.g. Facebook) on dedicated to the School accounts<sup>10</sup>.

The provision of an academic advisor per semester ensures compliance with University policies and smooth dissemination of information related to the UGP but makes it difficult for personalized assistance to the students. On the contrary, this is done in an ad-hoc manner, during higher semesters in the framework of elective courses and the Diploma Thesis where the students feel comfortable to consult their instructors / supervisors regarding their studies as well as their future plans. Defining a specific, per student, academic advisor throughout students' studies, is recommended.

## III. Conclusions

The UGP was designed and is delivered in a way that encourages students to take an active role in creating their own learning process and experience. Thus, the main aim of student-centered learning is practically satisfied. However, teaching staff training so as to design their courses in a manner that fully supports student-centered learning is still needed.

### Panel Judgement

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

<sup>7</sup> [courses.ece.tuc.gr](http://courses.ece.tuc.gr)

<sup>8</sup> [www.eclass.tuc.gr](http://www.eclass.tuc.gr)

<sup>9</sup> <https://www.youtube.com/c/ECETUC>

<sup>10</sup> <https://www.facebook.com/TUC.ece.chania>

### **Panel Recommendations**

- Regular evaluation and adjustment of course delivery modes and pedagogical methods applied, should be considered. A first step towards this is to include a relevant question in the Comments section of the course evaluation questionnaire.
- Robust assessment processes are critical for a rigorous evaluation of the level of student learning. Beyond learning outcomes judgment, the modes of assessment selected should shape not just what, but how students learn. Empowering and engaging learners through assessment design and providing opportunities for dialogic feedback is central to learning and the student experience.
- Training of teaching staff regarding student-centered learning should be considered. Establishment, at institution level, of a Centre for Teaching and Learning which aims to improve the teaching experience could help towards this direction.
- Three ways to think about the role of teachers in student-centered learning are: resources (teachers serve as experts and key sources of knowledge, and students share responsibility for accessing that knowledge), mentors (strong relationships with trusted adults give students the confidence and motivation they need to take leadership in their learning), and guides (teachers provide the structure and guidance that enables students to overcome challenges and see how their classwork connects to larger interests and goals).
- Please consider defining, from the 1st semester, a specific per student academic advisor which should remain the same throughout student' studies. This will help the students feel comfortable to ask for assistance for any matter they face during their studies as well as for deciding about their future plans.

## 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).*

### Relevant documentation

- *Section 4 of the submitted proposal for accreditation (B1 Πρόταση ΠΠΣ ΗΜΜΥ.pdf)*
- *Program Guide<sup>11</sup> (B3 Οδηγός Σπουδών.pdf)*
- *Regulations for undergraduate studies (B4 Κανονισμοί.pdf)*
- *Web page of TUC for the internships<sup>12</sup>*
- *Web page of the School that guides the students to select an internship placement<sup>13</sup>*
- *Data submitted to the Integrated Information National Quality System (ΟΠΕΣΠ) for the academic years 2015-2016, 2016-2017, 2017-2018, 2018-2019 and 2019-2020 (B9 Δεδομένα ΟΠΕΣΠ.pdf)*

### Study Programme Compliance

#### I. Findings

Newly enrolled students receive an Information Brochure which describes in detail the first steps they need to follow for registration and access to the electronic services of the School (e.g. obtaining an Academic ID card, connection to Wi-Fi, management of personal Student Card, registration and management of e-classes, course and textbook registration, access to the Computer Centre and the Library, downloading certificates and diplomas, etc.). In addition, an event for welcoming first year students is organized, during which an introduction to the School is given and a brief presentation of the UGP is done.

Monitoring of students' progress is carried out entirely through an electronic platform<sup>14</sup>, in which course grades are inserted by the instructors and to which students have immediate access. In addition, the Academic Advisor (the same for all students in each semester) takes

<sup>11</sup> <https://www.ece.tuc.gr/index.php?id=4499>

<sup>12</sup> <https://www.tuc.gr/index.php?id=internships>

<sup>13</sup> <https://www.tuc.gr/index.php?id=1858>

<sup>14</sup> <https://secretaries.tuc.gr>

care of students' progress and provides feedback to the School regarding student cases that require special attention / treatment.

The Academic Advisor specifies in advance office hours, during which students can visit her/him for assistance, advising and for dealing with any issue that may arise during their studies. In addition, students meet the Dean and the academic staff once in each semester to raise any issues of concern that affect the students as a whole. Summer Schools and Seminars, in which graduates who have excelled careers in academia and/or industry present themselves, are organized every year, in order to better communicate to students what they can achieve, but also to establish channels of communication with alumni.

Student awards, promoting excellency, have been established at institution level and include:

- *Distinguished Graduate Commendation*. Recipients are all students that complete their studies within five years with a GPA 8.5/10 or above
- *Excellence Award*. Recipients are students (one for each completed year of studies) that meet specific criteria established by the Senate. Those criteria are revised regularly to better reflect excellency performance.

Specific scholarships and awards from institutions and companies located in Chania are also available. Furthermore, in order to promote the UGP and attract high-skilled students a First Time Entrant Commendation award has also been introduced. Recipients are the first year students who were admitted with the highest grade in the national introductory exams.

The Diploma Thesis is compulsory for obtaining a diploma. Quite often the results of a thesis work lead to publications in the proceedings of prestigious international conferences or journals undergoing full peer review as usual. The thesis work is supervised by a faculty member and in many cases diploma theses are conducted for the needs of externally funded R&D projects familiarizing the students with applied research. Since Diploma Thesis is awarded 30 ECTS, several quality assurance provisions are in effect:

- the School's General Assembly verifies the relevance of Thesis' subject to the curriculum,
- the Supervisor along with two other faculty members form an advisory committee which monitors the conducted work and the progress of the thesis
- Successful completion is verified, and grading is done by a three-members Examination Committee. The members of this committee not only examine the written report of the Diploma Thesis, but they are also present at its defence by the student.

Student mobility is carried out mainly through the Erasmus+ programme, both for attending classes abroad and /or carrying out an internship, as well as for conducting the research work for Diploma Thesis. Rules for ensuring the effectiveness of a mobility are in place:

- successful completion of all first-year courses is mandatory,
- successful completion of 50% of the total ECTS the student has registered to,
- possession of a recognized diploma which verifies that the student has sufficient knowledge of the teaching language at the host institution.

The Erasmus+ internship is included in the study guide through a relevant course (Erasmus+ Internship/ECE 511, 10th semester) but it is not compulsory for the diploma. It is awarded five



ECTS for each calendar month of employment. However, those ECTS do not count for acquiring the diploma and they are only indicated in the Diploma Supplement.

Placements for Erasmus+ internships are advertised by posts on the School's website and Facebook page while external stakeholders that offer internships can declare and registered them through the ATLAS platform<sup>15</sup>.

## **II. Analysis**

During the meetings with the students and graduates it was verified that the School is doing their best to help students conclude their studies gracefully and to promote excellency. However, the accredited ECTS, duration and promotion of internships, either in the framework of Erasmus+ or in the local industry, show that the School has practically downgraded the importance of internships. The aim of an internship is to familiarize students with a future working environment, let them acquire practical skills and exercise the knowledge and skills they developed during their studies by facing real-world problems, and get ready for the labour market. For the students, practical training is a goal-oriented and diverse work that develops competence in relation to the professional field and working life. Practical training offers them opportunities to participate in recognizing and analysing the development needs of the field and helps them develop a professional identity by learning key work tasks.

A similar situation was found for students' mobility. While the UGP is ECTS compatible and rules for approving student mobilities are quite fair, it seems that students' mobility is not promoted in practice. The objective of students' mobility is to contribute to establishing a European Education Area with a global outreach and to strengthen the link between education and research. The School should give the information/opportunity to the students to get exposed to different views, knowledge, teaching, and research methods as well as work practices in their study field in the European and international context and develop their transversal skills such as communication skills, language skills, critical thinking, problem solving, inter-cultural skills and research skills.

## **III. Conclusions**

The School tries to do their best to ensure smooth operation of the UGP and let the students enjoy an active and effective learning environment. However, two important parts of the curriculum seem to be suppressed and under-promoted: internships and student mobility. The School should take immediate action for the remedy of those misfires.

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<sup>15</sup> <https://submit-atlas.grnet.gr/Default>

### Panel Judgement

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

### Panel Recommendations

- Internships should be seen as an important tool of the UGP and not as an obstacle to student studies. The School must try to strengthen their network with the local industry, develop an extended internship network, upgrade the importance of internship in the UGP and identify means for the financial support of students doing their internships, beyond the national tools and the Erasmus+ program.
- The School should undertake a campaign for promoting students (and staff) mobility. Extending their Erasmus+ network with new agreements must be an absolute priority.

## 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 recognise 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.*

### Relevant documentation

- *Section 5 of the submitted proposal for accreditation (B1 Πρόταση ΠΠΣ ΗΜΜΥ.pdf)*
- *Quality Assurance Goals for the UGP (B6 Στοχοθεσία.pdf)*
- *Summary of Student Evaluations - Calendar Year 2019 (B7 Αξιολόγηση από τους φοιτητές Σχολής ΗΜΜΥ.pdf)*
- *Data submitted to the Integrated Information National Quality System (ΟΠΕΣΠ) for the academic years 2015-2016, 2016-2017, 2017-2018, 2018-2019 and 2019-2020 (B9 Δεδομένα ΟΠΕΣΠ.pdf)*
- *Report for the R&D projects in which the faculty participated (B10.1 Συνοψη Ανάλυσης Ερευνητικών Εργων ΗΜΜΥ.pdf)*
- *List of the R&D projects of the faculty (B10.2 Πίνακας Ερευνητικών Εργων ΗΜΜΥ.pdf)*
- *Scholar Google profiles of the faculty (B10.4 Google Scholar Profiles Jan 2022.pdf)*
- *Annual Activity Reports (B10.6 Annual Activity Reports 2010-2021.pdf)*
- *Example of an Academic post advertisement (B10.8 Open Call for Faculty Positions.pdf)*

### Study Programme Compliance

#### I. Findings

The EEAP members carefully studied the relevant documentation and had extensive discussion with the teaching staff during their meeting with them. Useful information for some aspects was also gained from the meeting with the students. The main findings are summarized below:

- Selection and appointment of new academic staff makes use of a world-wide pool of candidates, avoiding appointments from within their own University. The procedures used are standard as determined by Greek law.
- The teaching load is three modules per academic year, which is like or even lower than that of other universities in Greece and abroad. Teaching load is burdened by lab sessions and Diploma theses supervision.

- The admin load is a bit heavy, and includes participation in committees, student advising etc. However, it is not much different from the admin load in other universities in Greece and abroad.
- The research performance of academic staff is one of the main criteria for their promotion. As a result, faculty invests a lot of effort into that with impressive results both in terms of fundamental and applied research (e.g. R&D grants). Thus, the EEAP concludes that the School actively promotes the increase of the volume and quality of the research output within the academic unit
- Linking education with research is actively and successfully done and it was confirmed by both the students and the graduates. The panel has seen several examples of linking research and teaching. They make use of research labs linking research topics and practical exercises. The theses completed by the students are almost always connected to a research topic of the supervising faculty members and quite frequently lead to joint research publications in conferences and journals.
- Staff mobility is disappointing. There are some ERASMUS+ / MUNDUS agreements and a few bilateral agreements with non-European Universities. Use of sabbaticals is also limited and this is ascribed to insufficient capacity of academic staff since the teaching load of the leaving personnel is assigned to the other members.
- Encouragement to experiment with new teaching methods and the use of new technologies for teaching is missing.

## II. Analysis

The panel is concerned that there is no overall research strategy for hiring new staff even for cases of absolute need, i.e., to cover the part of the UGP related to Energy and Power. It appears that the appointments are made in an ad hoc manner, and this also leads to research fragmentation. Although there are some pockets of research areas of excellence, we could not identify a large research group in a “niche” area that distinguishes the school from other institutions; as a result, this is reflected in the study program that lacks focus.

It is also disappointing that the School fails to attract more female academic staff. Similarly, the mobility of the staff (ERASMUS+, etc.) seems to be rather limited while active encouragement of the teaching staff to get a sabbatical leave is absent. Cohesion among the academic staff seems to be low; it feels like a collection of individuals with a basic level of collaboration among them rather than an orchestrated team. Saying that, their research records are in the “good to excellent” range.

According to students' confessions, professors are maxed out because they take three modules every semester, and they are overloaded with Diploma theses (more than 10 per faculty member). The number of Diploma theses per academic staff member is indeed high and the School must investigate ways to blunt it. However, the teaching load in general is not that high. Admin load is on the heavy side, but it is typical of that of a Greek University

### III. Conclusions

The academic staff is qualified to teach the courses of the program although sometimes the staff is forced to teach courses out of their expertise. Some of the issues mentioned above (sabbaticals, mobility) must be addressed as they are essential for staff development. Furthermore, they should provide incentives to attract female academic staff. For example, childcare facilities, etc.

#### Panel Judgement

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

#### Panel Recommendations

- Establish a research strategy towards the creation of excellence niches. This will strengthen the cohesion among the academic staff and will be reflected in the UGP in terms of focus and specialization
- Improve staff development by addressing the issues of sabbatical and mobility
- Improve the environment in order to balance the gender distribution of the academic staff
- Focus staff recruitment in order to address delivery of courses by experts in the area of the course
- Encourage innovation in teaching methods and the use of new technologies for teaching.

## 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.*

### Relevant documentation

- *Section 6 of the submitted proposal for accreditation (B1 Πρόταση ΠΠΣ ΗΜΜΥ.pdf)*
- *Surveys of the Liaison and Career Office (B10.5 Μελέτες Γραφείου Διασύνδεσης.pdf)*
- *Data submitted to the Integrated Information National Quality System (ΟΠΕΣΠ) for the academic years 2015-2016, 2016-2017, 2017-2018, 2018-2019 and 2019-2020 (B9 Δεδομένα ΟΠΕΣΠ.pdf)*

### Study Programme Compliance

#### I. Findings

The School is located north of Chania, outside the main town. There is a bus that transports students and staff between the campus and the City.

The School has a number of amphitheatres, modern classrooms and a number of specialized labs (lab sessions run in rotation as they have limited capacity). There is a Computer Centre with specialized software for laboratory teaching. Also there are several student services: Department of Student Affairs, Directorate of Academic Affairs, Liaison and Career Office, Language Centre, Library, and Information Centre etc. There is also a Cafeteria that provides catering for students and staff but it is small.

The majority of the student accommodation is old and in need of urgent repair; several parts of the accommodation are currently under renovation. Open market accommodation is prohibitively expensive. Also, the female student population is very low. Athletic facilities are good overall, they have a basketball court as well as a football field. There is a swimming pool, very close to the campus, which is currently non-operational.

The admin part of the School currently employs two members of staff. All student requests are handled electronically, minimizing the need for “physical requests”. On the other hand, courses’ evaluation is still paper based.

The Liaison and Career Office operates at institution level. However, its role in promoting the UGP, via the graduates, in UGPs implementation, through the internship network, and for the UGP amendment and redesign, by collecting data from graduates and external stakeholders, could be vital. Unfortunately, it seems that this Office is doing only admin work and does not take any proactive actions.

Students’ mobility is disappointing. The Erasmus Office, also operating at institution level, must be more active and proactive in establishing new agreements and promoting student mobility.

## **II. Analysis**

In addition to the documentation presented to EEAP members and the meetings with faculty, students and graduates, an in situ visit of a panel member was agreed with the School Deans. In particular, on Thursday, January 19, 2023, an EEAP member visited the University, from 10:00 am to 13:20 pm, for a guided tour in the facilities, lecture halls, research and teaching laboratories, the library etc. The program of the lab & facilities tour was as follows:

- A.** 10:00-10:20 Analysis and Design (Synthesis) of Telecommunication Devices Lab
- B.** 10:20-10:40 Computer Centre and Library
- C.** 10:40-11:00 Automation Lab
- D.** 11:00-11:20 Electric Power Systems Lab
- E.** 11:20-11:40 Graphics Research Lab
- F.** 11:40-12:00 Microprocessor and Hardware Lab
- G.** 12:00-12:20 Circuits, Sensors and Renewable Energy Sources Lab
- H.** 12:20-12:40 Electronics Lab
- I.** 12:40-13:00 Optoelectronics Lab
- J.** 13:00-13:20 ECE School Administration Offices

The facilities are brand new; the access is easy, and the laboratories are well staffed and open to the students. The only problem identified and confirmed by the instructors and lab assistance is that the computers in computer labs are rather old and need to be upgraded as soon as possible.

The teaching facilities are in good condition and sufficient. The labs are well equipped and up-to-date. Using lab rotation, they can handle the large number of students. Overall, the teaching facilities appear to run in a satisfactory manner.

The Cafeteria is rather small, well below the required capacity. Students frequently fail to find available tables for their meals.

The students seem to be satisfied with welfare and academic support. The students were not happy that (i) several modules were taught by academic staff outside their expertise and (ii) many elective courses are not offered every year. Several modules run in English but there were no incoming (or outgoing) ERASMUS+ students. The panel was disappointed to hear that no students had taken up any of the ERASMUS+ opportunities. Also, student participation in course evaluations is rather low.

### III. Conclusions

Overall, the School is substantially doing well with learning resources and student support. But they need to address the issues identified above. The TUC, on the other hand, should upgrade the role of the Liaison and Career Office. It is very disappointing to see that the last survey conducted by this office dates to 2011 and refers to graduates of 2001-2006. In the field of Electrical and Computer Engineering this is ages ago.

#### Panel Judgement

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

#### Panel Recommendations

- The role of Liaison and Career Office must be upgraded. If additional staff is needed for that purpose then the TUC should consider doing that urgently. This Office can help in promoting the internships and extending the internship network of the School. It should also be proactive by conducting annual surveys of the graduates in order to provide feedback for the (re)design of the UGP whenever needed. The graduates of the UGP are an asset and for publicity purposes.
- Students' mobility is disappointing. The Erasmus Office should be more active and assist the faculty to establish additional agreements and promote student and staff mobility. If additional staff is required, the TUC should take immediate action towards this direction.
- Improve student accommodation, athletic facilities, and catering areas.



## 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.*

### Relevant documentation

- *Section 7 of the submitted proposal for accreditation (B1 Πρόταση ΠΠΣ ΗΜΜΥ.pdf)*
- *Quality Assurance Goals for the UGP (B6 Στοχοθεσία.pdf)*
- *Summary of Student Evaluations - Calendar Year 2019 (B7 Αξιολόγηση από τους φοιτητές Σχολής ΗΜΜΥ.pdf)*
- *Minutes of MODIP meeting(s) (B8 Πρακτικό ΜΟΔΙΠ.pdf)*
- *Data submitted to the Integrated Information National Quality System (ΟΠΕΣΠ) for the academic years 2015-2016, 2016-2017, 2017-2018, 2018-2019 and 2019-2020 (B9 Δεδομένα ΟΠΕΣΠ.pdf)*
- *Annual Activity Reports (B10.6 Annual Activity Reports 2010-2021.pdf)*
- *Questionnaire for course (module) evaluation (B10.7 Φόρμα αξιολόγησης μαθημάτων.pdf)*

### Study Programme Compliance

#### I. Findings

After studying the submitted material and examining all sources of information given to the EEAP along with the conducted interviews with the academic staff, students, graduates, and external stakeholders the panel members found the following:

- Detailed information regarding the structure of the UGP as well as its implementation is available online.

- Electronic systems are in place to handle student registration to courses, to allow class scheduling and classroom allocation, to inform students about forthcoming exams and course grades, to provide information about student cafeterias and the food program, to promote student mobility etc.
- The evaluation sheets in each course are in written form and are completed in the last lecture so as to reflect the views of the students that systematically attend the lectures. This paper-based data collection does not ensure data integrity and makes data processing and analysis, especially as far as the comments section of the questionnaires is concerned, difficult and inefficient.
- The School collects data on the students' progress and conducts surveys on the students' satisfaction for all courses offered. These data are compiled, and appropriate key indicators are extracted and analysed as described in the corresponding process of the IQAS. However, specific actions undertaken based on the finding were not reported.
- There are annual reports (up 2019-2020) submitted to and extracted from the National Information System for Quality Assurance in Higher Education (NISQA). Those data seem to be correct (some exceptions were found and reported in Principle 9), but they are not useful for the assessment of the UGP (neither internally by the School nor externally by the EEAP members) unless systematic analysis procedures are defined.
- According to the School, questionnaires aiming to measure the overall satisfaction of the students / graduates by the UGP are collected immediately after graduation. No such practical evidence was given to the panel, nor ways of analysing the information collected in those questionnaires for decision making was identified in the IQAS.

## **II. Analysis**

The panel considers that the efforts of the School are in substantial compliance with the expectations under principle 7 for the collection of data relevant to the individual courses of the curriculum, and, at some level, for the UGP as a whole. Regarding the latter, a useful source of information is the graduates. The Liaison and Career Office must be activated for this purpose. On the other hand, the panel did not identify any systematic and concrete way for analysing those data for decision making regarding the UGP.

## **III. Conclusions**

Data relevant to UGP are collected at two main levels: courses' content and students' satisfaction about UGP, as described in the corresponding processes of the accredited IQAS. In addition, students' studies are supported by online tools by a variety of means (access to learning material and asynchronous learning activities, registration to classes, etc). However, as far as the systematic analysis of data for decision making, regarding the UGP, not much is done.

## Panel Judgement

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

## Panel Recommendations

- Clarifications are needed in reference to the way the collected data, relevant to the UGP, are used for its improvement. Special attention must be given to the way data are analysed for decision making
- Data collection regarding the evaluation of individual courses by the students must be automated to allow proper and efficient processing and analysis.
- The data regarding the KPIs that are submitted to the National Information System for Quality Assurance in Higher Education (NISQA) can be included and analysed in the internal reports of the School for the UGP.

## 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.*

### Relevant documentation

- *Section 8 of the submitted proposal for accreditation (B1 Πρόταση ΠΠΣ ΗΜΜΥ.pdf)*
- *Website of the School<sup>16</sup>*

## Study Programme Compliance

### I. Findings

The key information regarding the academic unit and the study programme (i.e., structure, mode of attendance, criteria for assessment, degree awarded, teaching staff's CVs) are all available online. All course syllabi and the undergraduate course catalogue are rigorous, they are published on the School's website and provide clear information on course structure and learning outcomes. The teaching staff set clear expectations on the courses and clarify the course assessment methods at the beginning of each academic term.

The School supports a number of activities related to public information such as information day for newly registered students, career days, conferences and other related events, all available online. The website of the School is well designed, and the information items it provides are adequate to the needs for public information both in Greek and in English. All information of practical nature is available online (accommodation, public transport, electronic forms etc.), as well as information regarding the various facilities offered by the University in general and by the degree program such as library, labs, course outlines by semester, marking of exams, student mobility (Erasmus), etc. Also published on the website is the policy for quality assurance.

The School's website with tabs such as "Calendar" and "Direct Interest" is a living reflection of the smooth running of the School.

### II. Analysis

The School maintains a well-designed website giving detailed information on all its activities online. However, during its meeting with students, the panel heard that certain items of the website were sometimes not updated on time.

<sup>16</sup> <https://www.ece.tuc.gr/index.php?id=4481>

### III. Conclusions

School's website is well designed giving all information needed online. However, as the website is the "shop window" of the School, particular effort is needed to keep its information content up-to-date and synchronized between the two versions (English and Greek).

#### Panel Judgement

<b>Principle 8: Public Information</b>	
Fully compliant	<b>X</b>
Substantially compliant	
Partially compliant	
Non-compliant	

#### Panel Recommendations

Try to keep the website information content up-to-date and synchronized between the two versions (English and Greek)

## 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.*

### Relevant Documentation

- *Section 9 of the submitted proposal for accreditation (B1 Πρόταση ΠΠΣ ΗΜΜΥ.pdf)*
- *Program Guide<sup>17</sup> (B3 Οδηγός Σπουδών.pdf)*
- *Courses' description - syllabi (B5 Περιγράμματα Μαθημάτων ΠΠΣ ΗΜΜΥ.pdf)*
- *Quality Assurance Goals for the UGP (B6 Στοχοθεσία.pdf)*
- *Summary of Student Evaluations - Calendar Year 2019 (B7 Αξιολόγηση από τους φοιτητές Σχολής ΗΜΜΥ.pdf)*
- *Internal Evaluation Record (B8 Πρακτικό ΜΟΔΙΠ.pdf)*
- *Data submitted to the Integrated Information National Quality System (ΟΠΕΣΠ) for the academic years 2015-2016, 2016-2017, 2017-2018, 2018-2019 and 2019-2020 (B9 Δεδομένα ΟΠΕΣΠ.pdf)*
- *Annual Activity Reports<sup>18</sup> (B10.6 Annual Activity Reports 2010-2021.pdf)*
- *Questionnaire for course (module) evaluation (B10.7 Φόρμα αξιολόγησης μαθημάτων.pdf)*

### Study Programme Compliance

#### I. Findings

The panel could not identify any internal report dedicated to the evaluation of the UGP. Furthermore, after studying the relevant documentation and meeting OMEA and MODIP

<sup>17</sup> <https://www.ece.tuc.gr/index.php?id=4499>

<sup>18</sup> <https://www.ece.tuc.gr/index.php?id=4126&L=388>

representatives, the teaching staff, students, graduates and the external stakeholders, the EEAP members found the following:

- Internal evaluation of the UGP is done via student questionnaires that evaluate the individual courses. Anonymous questionnaires are distributed during lessons, which are then collected, scanned and archived. The results of the evaluation are recorded by the institution's internal evaluation team (OMEA) and transferred to the quality assurance unit (MODIP) of the Institution.
- Rigorous data processing for the purpose of documented decision making seems to be entirely missing.
- Important sources of information regarding the evaluation of the UGP as a whole are missing (e.g., teaching staff views and recommendation, graduates' satisfaction and feedback, external stakeholders' feedback, etc)
- The results of the internal evaluation are communicated to the teaching and research staff members of the institution and to the Dean. No internal evaluations have been published on the institution's website. Also, no Data submitted to the Integrated Information National Quality System (ΟΠΕΣΠ) was found for the academic year 2020-2021.

## **II. Analysis**

According to the IQAS, the UGP's internal evaluation is carried out annually and it is discussed in a special meeting of the School Assembly in which students' representatives are also present. The panel members are not convinced that this process is followed as planned. The annual activity reports that were included in the documentation that the EEAP received consist mainly from the individual reports of the Academic Staff regarding their research activities. Very few information is included there about their teaching approaches and their personal development regarding that dimension. The most concrete source of information regarding the internal evaluation of the UGP is given in the Summary of Students Evaluations for the calendar year 2019 (Spring 2018-2019, Fall-2019-2020). There, a basic statistical processing is done (averages and standard deviations) for the quantitative inputs collected by the course evaluation questionnaires. However, no formal processing of student comments is presented there (the use of a word cloud per course is a very simple idea to do that) although the evidence the panel received from the students is that they do use the comments section of the questionnaire and in most cases their comments are, indeed, addressed. In the Summary of Students Evaluations for the calendar year 2019, it was identified that students' participation in the courses evaluation was low and two measures to address this problem were identified: (a) questionnaire circulation and filling to be done electronically, and (b) measures to encourage teaching quality to be taken. Unfortunately, more than three years later, it seems none of the two was (successfully) done.

## **III. Conclusions**

The intention of the School to implement an internal assessment of the UGP on an annual basis was confirmed. However, it seems that the School confuses UGP evaluation with the evaluation

of the School as a whole. Thus, the highest emphasis is put on the research activities of the academic staff which are, indeed, impressive. The information collected for the internal evaluation of the UGP comes merely from the individual courses' evaluation, thus, a holistic perspective is missing. Information collected formally from the graduates should be included (the Liaison and Career Office of the Institution must be involved for this purpose) as well as feedback from external stakeholders (through the internships offered to students).

### Panel Judgement

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

### Panel Recommendations

- Annual assessment of the UGP must be conducted as described in the IQAS.
- For the purpose of the annual internal assessment of the UGP the views of teaching staff, graduates and external stakeholders must also be taken into account. Collecting data from the teaching staff regarding their own teaching approaches, their training to improve teaching and their suggestions for the modules they teach can be collected in a separate section of the annual activity reports they submit. Data from the graduates can be collected via regularly based surveys form the Liaison and Career Office, while feedback from the employers and other external stakeholders can be collected through their evaluation of the internships, they offer to UGP students
- The assessment of the individual courses by the students through questionnaires should be done electronically. This will allow effective and efficient processing of the collected data.
- Drawing conclusions from the processed data and creating proposals and objectives for the improvement of the curriculum is a must.
- The panel recommends making the results of the internal evaluation and actions taken more transparent and easily available to the constituents (e.g. students, external stakeholders, etc).



## 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.*

### Relevant Documentation

- *Section 10 of the submitted proposal for accreditation (B1 Πρόταση ΠΠΣ ΗΜΜΥ.pdf)*
- *Report for the School's Evaluation on 2011 by the External Evaluation Committee<sup>19</sup>*
- *Information about the External Advisory Board<sup>20</sup>*
- *Program Guide<sup>21</sup> (B3 Οδηγός Σπουδών.pdf)*
- *Courses' description - syllabi (B5 Περιγράμματα Μαθημάτων ΠΠΣ ΗΜΜΥ)*
- *Quality Assurance Goals for the UGP (B6 Στοχοθεσία.pdf)*

### Study Programme Compliance

#### I. Findings

The last formal external evaluation of the UGP (as a part of School's evaluation) dates back to 2011. However, this is not due to the School's responsibility but to the procedures followed for that purpose in Greece's Higher Education System. Nevertheless, during the meetings with OMEA and MODIP representatives, the teaching staff and the students, the EEAP members verified School's dedication to the external evaluation process. They also found the following:

- The School has established an external Advisory Board for the purpose, among others, of evaluating the UGP on a regular basis and beyond the evaluations organized by HAHE. This is a great action, and the panel evaluates it very positively.
- The panel has been informed of the School's intention for the creation of an external Professional Board consisting of external stakeholders, including graduates, local employers and representatives of the society, which will provide recommendations and

<sup>19</sup> <https://www.ece.tuc.gr/index.php?id=17663&L=52>

<sup>20</sup> <https://www.ece.tuc.gr/index.php?id=16189&L=928>

<sup>21</sup> <https://www.ece.tuc.gr/index.php?id=4499>

feedback regarding the UGP in combination with the employment prospects of the local community.

- Recommendations given in the 2011 external evaluation, regarding the energy part of the UGP, the internship and students' mobility have not yet been reflected on the UGP, neither on its structure nor on its implementation / operation.

## II. Analysis

It is not clear whether the results of the previous external evaluation, as far as the UGP is concerned, contributed to improving the UGP. The part of the curriculum related to the classic studies of an Electrical Engineer is still weak, and this is evident even to the students. This causes negative feelings on them regarding their self-confidence as future Electrical Engineers. Similarly, recommendations regarding the importance of internships and student mobility were not fully adopted.

It is important for the institution to take advantage of the external evaluation committee not only for the general improvement of the School and its members, but also more specifically for the improvement of the UGP. The external Advisory Board can offer significant feedback and advice based on their involvement in similar programmes abroad and possible amendments they do in their programmes. The School informed the panel that during 2022 three meetings with the external Advisory Board took place. The results of this interaction / cooperation, however, have not yet been communicated to the UGP constituents and they have not yet been reflected in the UGP.

## III. Conclusions

The panel ascertained the School's understanding of the value and importance of external evaluation for the UGP improvement. However, recommendations received either from formal evaluation organized by HAHE or informally from graduates, external stakeholders, and the external Advisory Board, seem to be very slowly integrated in the UGP. The most obvious example to that is the recommendation to expand the energy sector of the UGP and the corresponding teaching and research activities, already made by the external evaluation committee in 2011 but not yet reflected in the UGP.

### Panel Judgement

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

### **Panel Recommendations**

- Reaction on the results of the formal external evaluation of the UGP should be done promptly
- Get advantage of the existing external Advisory Board to collect feedback about the UGP on a frequent and regular basis.
- Try to establish the external Professional Board as soon as possible.
- Create progress reports, proposals, outline timelines and targets in preparation for the next external assessment.
- Pursue more frequent external evaluation, even though this is not your responsibility.

## **PART C: CONCLUSIONS**

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

- The UGP is well designed, following the structure and logic of similar well-established and long-lasting programs in Greece and abroad.
- The UGP is supported by well-qualified and trained personnel while the well-equipped labs and the infrastructure in general is a plus that makes the program very competitive in Greece and internationally.
- Linking research with studies is effectively done through seamless access of students in research labs and by focusing diploma theses to research-oriented problems. Involvement of students in R&D projects also works towards this direction. As a result, the graduates are well-equipped to continue their studies in post-graduate programmes.
- Student comments in the questionnaires for courses' evaluation are considered and actions towards addressing the raised issues are applied.
- There is a close relationship between students and teaching staff. The openness of staff and the critical view of students helps the UGP to run effectively.
- The faculty pursue state of the art research in emerging areas. The School's research has a sizable footprint in the international research landscape.
- The faculty and the research labs have a strong presence in receiving highly competitive research grants.
- The establishment of an External Advisory Board composed of external academics to ensure that the UGP is always up to date and follows international practice in the field.
- The School follows clear, transparent, and fair processes for the recruitment of properly qualified permanent teaching staff. Recruitment of teaching staff on a contractual basis is also supported via transparent procedures.
- The provision to impose a limitation to six courses per semester in the UGP.
- The Staff to Student ratio for the UGP, compared to similar programs in Greece, is fair.

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

- The energy part of the curriculum is weak and the corresponding sector of the School is understaffed.
- There is no annual internal assessment for the UGP per se in written form.
- There is no provision to consider graduates' (and external stakeholders') feedback for the assessment of the UGP as a whole
- Student centered learning principles need to be better understood and further implemented.
- Student, faculty, and personnel mobility needs encouragement. The Erasmus office should be more active in terms of expanding the School's Erasmus network and for promoting mobility.

- Coherent School policies aiming to attract highly qualified academic staff need to be developed and implemented. Gender ratio in the faculty is an issue and reflects also on the gender ratio in students' population.
- There is a poor interest by the students to do an internship. This is probably due to the limited importance given to the internships (in the UGP) as well as the small network of external stakeholders the School has.
- Internship's duration and awarded ECTS need to be re-evaluated.
- The Liaison and Career Office should be activated by conducting surveys on the graduates and by expanding the internship network of the School.

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

- Establishment, at institutional level, of a Centre for Teaching and Learning which aims to improve the teaching experience and effectiveness should be pursued as soon as possible.
- The Quality Assurance Policy of the School, as far as the UGP is concerned, must be more specific and must include clear and practically applicable processes.
- The Quality Assurance Goals for the UGP should focus on the UGP, not on research performance. Goals related to research achievements (such as Goals 5-11 in B6) can be set as Quality Assurance Goals for the School. In that respect, Quality Assurance Goals directly related to UGP could be increased. The QAG #3 and the corresponding KPI is a very clear example towards this direction.
- Participation of students in the annual assessment of the curriculum must be ensured.
- A provision for formal involvement of external stakeholders and/or graduates in the annual assessment of the curriculum should be added in the Quality Assurance Policy of the School.
- The external Advisory Board can be extended to include industry people. In any case their feedback about the UGP shall be regularly sought for.
- The assessment of the individual courses by the students through questionnaires should be done electronically. This will allow efficient processing of the gathered information and will increase students' participation. A specific provision for that must be added in the Quality Assurance Policy of the School.
- Specific remedy measures accounting for quality deviations regarding teaching must be also added in the Quality Assurance Policy of the School.
- Inviting possible faculty candidates for open lectures is a good practice and could be added in the corresponding quality assurance process.
- The role (e.g. conducting surveys of the UGP graduates on a regular basis) of the Liaison and Career Office in the assessment of the quality goal that refers to the acquired qualifications by the UGP graduates should be clearly mentioned in the IQAS and the Quality Manual.
- The evaluation by the students of the quality of infrastructure, services, processes, and tools that support learning and academic activities must be included as a distinct process in the Quality Manual. The same also applies for the quality of support services such as the administrative services, the Library, and the student welfare office.

- The Energy and Power part of the UGP must be significantly enriched. Better planning of future faculty posts could ensure this in the medium to long term.
- The School should strengthen their links with the local industry for the benefit of the UGP students and graduates.
- Take the initiative in establishing an Alumni Association and an External Advisory Board comprising professional stakeholders, including alumni.
- Make better use of the opportunities offered by the Erasmus+ for student and staff mobility. The School should undertake a campaign to promote that. Extending their Erasmus+ network with new agreements must be an absolute priority.
- Consider upgrading the importance of Internship by letting a limited number of ECTS, maybe 10, to count for the ECTS required for graduation. Internships should be seen as an important tool of the UGP and not as an obstacle to student studies. The School must try to strengthen their network with the local industry, develop an extended internship network, upgrade the importance of internship in the UGP and identify means for the financial support of students doing their internships, beyond the national tools and the Erasmus+ program.
- Regular evaluation and adjustment of course delivery modes and pedagogical methods applied, should be considered. A first step towards this is to include a relevant question in the Comments section of the course evaluation questionnaire.
- Training of teaching staff regarding student-centered learning should be considered. Establishment, at institution level, of a Centre for Teaching and Learning which aims to improve the teaching experience could help towards this direction.
- Consider defining, from the 1st semester, a specific per student academic advisor which should remain the same throughout student' studies. This will help the students feel comfortable to ask for assistance for any matter they face during their studies as well as for deciding about their future plans.
- Establish a research strategy towards the creation of excellence niches. This will strengthen the cohesion among the academic staff and will be reflected in the UGP in terms of focus and specialization
- Improve staff development by addressing the issues of sabbatical and mobility. Encourage innovation in teaching methods and the use of new technologies for teaching.
- Improve the environment in order to balance the gender distribution of the academic staff
- Focus staff recruitment in order to address delivery of courses by experts in the area of the course.
- The role of Liaison and Career Office must be upgraded. If additional staff is needed for that purpose then the TUC should consider doing that urgently. This Office can help in promoting the internships and extending the internship network of the School. It should also be proactive by conducting annual surveys of the graduates in order to provide feedback for the (re)design of the UGP whenever needed. The graduates of the UGP are an asset and for publicity purposes.
- At Institution level, the Erasmus Office should be more active and assist the faculty in order to establish additional agreements and promote student and staff mobility. If additional staff is required the TUC should take immediate action towards this direction.

- The data regarding the KPIs that are submitted to the National Information System for Quality Assurance in Higher Education (NISQA) can be included and analysed in the internal reports of the School for the UGP.
- Keep the website information content up-to-date and synchronized between the two versions (English and Greek)
- Annual assessment of the UGP must be conducted as described in the IQAS.
- For the purpose of the annual internal assessment of the UGP the views of teaching staff, graduates and external stakeholders must also be taken into account. Collecting data from the teaching staff regarding their own teaching approaches, their training to improve teaching and their suggestions for the modules they teach can be collected in a separate section of the annual activity reports they submit. Data from the graduates can be collected via regularly based surveys form the Liaison and Career Office, while feedback from the employers and other external stakeholders can be collected through their evaluation of the internships they offer to UGP students
- Make the results of the internal evaluation and actions taken more transparent and easily available to the constituents (e.g. students, external stakeholders, etc.).
- Reaction on the results of the formal external evaluation of the UGP should be done promptly
- Get advantage of the existing external Advisory Board to collect feedback about the UGP on a frequent and regular basis.
- Try to establish the external Professional Board as soon as possible.

#### IV. Summary & Overall Assessment

The Principles where full compliance has been achieved are: **3, 6, and 8.**

The Principles where substantial compliance has been achieved are: **1, 2, 4, 5, 7, 9, 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	
Substantially compliant	<b>X</b>
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
	<b>X</b>	



## The members of the External Evaluation & Accreditation Panel

**Name and Surname**

**Signature**

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