



**ΕΛΛΗΝΙΚΗ ΔΗΜΟΚΡΑΤΙΑ**  
HELLENIC REPUBLIC



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# Accreditation Report for the New Undergraduate Study Programme in operation of:

**Chemistry**

**Institution: International Hellenic University**

**Date: 14 January 2023**



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



Report of the Panel appointed by the HAHE to undertake the review of the New Undergraduate Study Programme in operation of **Chemistry** of the **International Hellenic University** 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 new undergraduate study programme in operation of **Chemistry** of the **International Hellenic University** comprised the following four (4) members, drawn from the HAHE Register, in accordance with Laws 4009/2011 & 4653/2020:

**1. Prof. Constantinos Varotsis (Chair)**

Cyprus University of Technology

**2. Prof. C. Takoudis**

University of Illinois Chicago

**3. Dr. P. Sotiriou**

Association of Greek Chemists

**4. Mr. K. Mataras**

University of Patras

## II. Review Procedure and Documentation

The Department of Chemistry managed to prepare a program that allowed meetings and discussions with ALL divisions of the department. In these meetings ALL members of the teaching staff were present. Furthermore, we had the opportunity to speak to all laboratory instructors, to visit the laboratories, as well as the research laboratories of all divisions. We also discussed with representative of the undergraduate students. We visited the library, computer room and the facility of scientific instruments.

**Day 1**, Monday, January 9, 2022: Meeting with the vice rector/President of MODIP, the chairman of the department, and several colleagues of different divisions. General presentation by the Department Chairman about the history of the department, current research and teaching activities, infrastructure, facilities, and financial situation including funding, and scientific publications and collaborations. Professor George Kyzas presented the undergraduate program.

**Day 2**- Tuesday, January 10, 2022: Afterwards the research activities of the divisions of organic, inorganic, physical, environmental chemistry, and biochemistry were presented by the group leaders. All presentations were detailed and informative, questions were asked, and problems discussed. All the presentations were given to the members of the external evaluation committee.

**Day 3** -Wednesday, January 10, 2022: The Chairman of the EEAP distributed tasks for the implementation of the review among the members of the Panel.

**Days 4-5-6.** Working on the report

- Prof. C. Varotsis (Chairman) Principles 3 and 7
- Prof. C. Takoudis Principles 1, 6 and 12
- Dr. P. Sotiriou Principles 2 and 9
- Mr. K. Mataras Principles 4 and 8

### III. New Undergraduate Study Programme in operation Profile

The Department of Chemistry of the International Hellenic University at Kavala was established in 2019. Historically, it is the evolution of the Department of Petroleum Chemistry established on 1976. The structure of the new Chemistry Department is based on three axes, with the corresponding educational and research laboratories, given as: a) Inorganic, Analytical and Environmental Chemistry, b) Organic Chemistry, Biochemistry and Food Chemistry and c) Physical Chemistry and Industrial Chemistry.

The stated mission of the Department of Chemistry is to provide high-level education and research in Chemistry and its modern applications in order its graduates to gain basic and specialized knowledge, laboratory experience and high-quality skills in the field of their interest. To this end the Department endeavours in attracting high-level students, providing high-level teaching and research driven education; the latter is introduced from the 6th Semester. The admission coefficient is set on 1.2, the least admission score is about 15,000, and the offered positions are fully covered (100%).

Appropriate links between studies and work opportunities as well as enhancement of the interactions between studies and research have already established. It is noted that only in Kavala there are two gigantic chemical Industries (fertilizers and oil-exploration with on and off-shore facilities) while a unit for ethyl alcohol distillation is on the way.

Likewise, the Department aims to promote research partnerships through a medium to large scale facility, named Hephaestus; that is a competence centre with advanced instrumentation running large European and National research projects and also attracting private funds from prestigious bodies such as the Stavros Niarchos and Bodosakis foundations.

The faculty members teaching and research, as well as laboratory and administrative staff are committed to implementing the Quality Policy of the Department and make a continuous effort to achieve its goals.

The current faculty is comprised of 19 members, who are assisted in their academic and other activities by 1 special faculty member on foreign languages (French, English), 2 laboratory teaching staff and additional 7 technical and administration personnel.

The Department offers an undergraduate programme in Chemistry (4 years, 240 ECTS) and it is involved in several post-graduate programmes, some stand-alone and some in collaboration with other Departments of IHU and other Universities.

To obtain the undergraduate degree, students must complete 47 courses, of which 37 are mandatory (224 ECTS), 6 are for pedagogical qualification (although mandatory without ECTS) and the remaining 4 courses (16 ECTS) are selected from a pool of 12 electives. The Department is committed to an extensive laboratory education: there are 20 mandatory laboratory classes (122 ECTS). At the last year of their studies (7<sup>th</sup> and 8<sup>th</sup> Semester) students shall choose a track between Chemistry and Technology of Materials (mainly nano chemistry) and Chemistry and Technology of Petroleum (mainly fuel chemistry). To complete their degree students may choose on different options or combine them in the following ways: to

undertake at the 8th Semester a Diploma Thesis (8 ECTS) and/or three months industrial-practical internship (4 ECTS) and/or to choose more electives (4 ECTS per each).

The current student population of the Department is 447 registered undergraduate students, 107 post-graduate students, 19 PhD students and 4 post-doctoral researchers. In 2023 the first graduates are expected, and the prediction is that the 80% of them will have completed their studies just in time, i.e., within the four-year timescale with expected average grade 7 out of 10.

The Department covers 10,000 m<sup>2</sup> of the Kavala-Campus with 12 lecture theatres and rooms and 23 laboratories well equipped (some modern with very advanced instrumentation).

## PART B: COMPLIANCE WITH THE PRINCIPLES

### Principle 1: Strategic Planning, Feasibility and Sustainability of the Academic Unit

Institutions must have developed an appropriate strategy for the establishment and operation of new academic units and the provision of new undergraduate study programmes. This strategy should be documented by specific feasibility and sustainability studies.

*By decision of the institutional Senate, the Institutions should address in their strategy issues related to their academic structure in academic units and study programmes, which support the profile, the vision, the mission, and the strategic goal setting of the Institution, within a specific time frame. The strategy of the Institution should articulate the potential benefits, weaknesses, opportunities or risks from the operation of new academic units and study programmes, and plan all the necessary actions towards the achievement of their goals.*

*The strategy of their academic structure should be documented by specific feasibility and sustainability studies, especially for new academic units and new study programmes.*

*More specifically, the feasibility study of the new undergraduate study programmes should be accompanied by a four-year business plan to meet specific needs in infrastructure, services, human resources, procedures, financial resources, and management systems.*

*During the evaluation of the Institutions and their individual academic units in terms of meeting the criteria for the organisation of undergraduate study programmes, particular attention must be placed upon:*

***a. The academic profile and the mission of the academic unit***

*The profile and mission of the department should be specified. The scientific field of the department should be included in the internationally established scientific fields of Higher Education, as they are designated by the international categorisation of scientific fields in education, by UNESCO (ISCED 2013).*

***b. The strategy of the Institution for its academic development***

*The academic development strategy for the operation of the department and the new study programme should be set out. This strategy should result from the investigation of the factors that influence the studies and the research in the scientific field, the investigation of the institutional, economic, developmental, and social parameters that apply in the external environment of the Institution, as well as the possibilities and capabilities that exist within the internal environment (as reflected in a SWOT Analysis: strengths, weaknesses, opportunities, and threats). This specific analysis should demonstrate the reason for selecting the scientific field of the new department.*

***c. The documentation of the feasibility of the operation of the department and the study programme***

*The feasibility of the operation of the new department should be justified based on:*

- *the needs of the national and regional economy (economic sectors, employment, supply-demand, expected academic and professional qualifications)*
- *comparison with other national and international study programmes of the same scientific field*
- *the state-of-the-art developments*



- *the existing academic map; the differentiation of the proposed department from the already existing ones needs to be analysed, in addition to the implications of the current image of the academic map in the specific scientific field.*

**d. The documentation of the sustainability of the new department**

*Mention must be made to the infrastructure, human resources, funding perspective, services, and all other available resources in terms of:*

- *educational and research facilities (buildings, rooms, laboratories, equipment, etc.)*
- *staff (existing and new, by category, specialty, rank and laboratory). A distinct five-year plan is required, documenting the commitment of the School and of the Institution for filling in the necessary faculty positions to cover at least the entire pre-defined core curriculum*
- *funding (funding possibility from public or non-public sources)*
- *services (central, departmental / student support, digital, administrative, etc.)*

**e. The structure of studies**

*The structure of the studies should be briefly presented, namely:*

- **The organisation of studies:** *The courses and the categories to which they belong; the distribution of the courses into semesters; the alignment of the courses with the European Credit Transfer System (ECTS).*
- **Learning process:** *Documentation must be provided as to how the student-centered approach is ensured (modes of teaching and evaluation of students beyond the traditional methods).*
- **Learning outcomes:** *Knowledge, skills and competences acquired by graduates, as well as the professional rights awarded must be mentioned.*

**f. The number of admitted students**

- *The proposed number of admitted students over a five-year period should be specified.*
- *Any similar departments in other HEIs with the possibility of student transfers from / to the proposed department should be mentioned.*

**g. Postgraduate studies and research**

- *It is necessary to indicate research priorities in the scientific field, the opportunities for interdisciplinary research, the challenges towards new knowledge, possible research collaborations, etc.*
- *In addition, the postgraduate and doctoral programmes offered by the academic unit, the research projects performed, and the research performance of the faculty members should be mentioned.*

**Relevant documentation**

- *Introductory Report by the Quality Assurance Unit (QAU) addressing the above points with the necessary documentation*
- *Updated Strategic Plan of the Institution that will include its proposed academic reconstruction, in view of the planned operation of new department(s) (incl. updated SWOT analysis at institutional level)*
- *Feasibility and sustainability studies for the establishment and operation of the new academic unit and the new study programme*
- *Four-year business plan*

## Study Programme Compliance

- 1a. The program has been running for 7 semesters, and has not completed a full cycle yet. The name of the program (Chemistry) is code 0531 according to ISCED and its main content should be inorganic, organic, and physical chemistry.
- 1b. Evidence has been provided that the replacement of the old study program (related to petroleum engineering) with the new one (chemistry) will blend the department better in the needs of the local society/industry. However, during the meeting with the private stakeholders, the representative of the oil industry was sceptical whether the graduates from the new program would have the same desirable skills as the ones of the old program.
- 1c. There are 20 faculty members and 10 members staff assisting with lectures and labs (EEP. EDIP. ETEP) B11: Study guide, p. 4). Just over half of the faculty members have a degree in chemistry or chemical engineering, and one-third in distant fields like electrical, mechanical and petroleum engineering. No one of the assisting staff has a degree in chemistry or chemical engineering. The specialty of synthetic chemistry is missing, and that of the organic chemistry is represented by just one person, who is doing all the teaching. Organic and more generally synthetic chemistry is a major part (40-50%) of a modern Chemistry department. This lack of specialty is reflected in the lack of the respective 4-year courses. Organic chemistry is basically restricted to the basics (three semesters' lectures and 2 semesters practical).

A distinct 5-year plan of how the situation will be remedied is missing.

- 1d. The curriculum has a mixed intention. It couples the basic courses of chemistry (first three years) with advanced undergraduate courses for engineering (4th year). There seems to be an abrupt quantum leap.
- 1e. Apparently (B24c, M4.040), the department asked for 1000 student over a 5-year period and that is how many it received. Fortunately, only about 100-120 per year remain active. The wish of the department to lower maximum number entrants to 120 per year should be granted.

## Panel Judgement

<b>Principle 1: Strategic planning, feasibility and sustainability of the academic unit</b>	
<b>a. The academic profile and the mission of the academic unit</b>	
Fully compliant	X
Substantially compliant	
Partially compliant	
Non-compliant	
<b>b. The strategy of the Institution for its academic development</b>	
Fully compliant	X
Substantially compliant	
Partially compliant	
Non-compliant	
<b>c. The documentation of the feasibility of the operation of the department and the study programme</b>	
Fully compliant	X
Substantially compliant	
Partially compliant	
Non-compliant	
<b>d. The documentation of the sustainability of the new department</b>	
Fully compliant	X
Substantially compliant	
Partially compliant	
Non-compliant	
<b>e. The structure of studies</b>	
Fully compliant	
Substantially compliant	X
Partially compliant	
Non-compliant	
<b>f. The number of admitted students</b>	
Fully compliant	
Substantially compliant	X
Partially compliant	
Non-compliant	
<b>g. Postgraduate studies</b>	
Fully compliant	X
Substantially compliant	
Partially compliant	
Non-compliant	

<b>Principle 1: Strategic planning, feasibility and sustainability of the academic unit (overall)</b>	
Fully compliant	<b>X</b>
Substantially compliant	
Partially compliant	
Non-compliant	

### **Panel Recommendations**

- The profile and mission of the department should be focused more on the fundamentals of the classically strategic areas of chemistry (e.g., organic, inorganic, physical chemistry, analytical chemistry, and biochemistry/food chemistry).
- The number of faculty should be increased, and the number of undergraduate students should be reduced. For the next 5 years senior Faculty at the rank of Associate and Full Professor should be hired in the fields of Organic Chemistry, Physical Chemistry, Inorganic Chemistry, Analytical Chemistry and if possible in Biochemistry/Food Chemistry.
- The structure of studies in the third year could be improved with more emphasis on the fundamentals and less emphasis on rather superficial coverage of a variety of specialties.
- The profile and mission of the department should be focused more on the fundamentals of the classically strategic areas of chemistry (e.g., organic, synthetic, biochemistry).
- Either the number of faculty should be increased, or the number of undergraduate students should be reduced. This recommendation is also coupled with available resources.
- The structure of studies could be improved with more emphasis on the fundamentals and less emphasis on rather superficial coverage of a variety of specialties.
- It is hard for us to have an opinion about postgraduate studies for such a young department. In any case, additional major instrumentation resources (like NMR, MS/MS, and ALD) could significantly enhance postgraduate studies and research.
- Hire a significant number of Organic chemists with expertise in synthesis.
- Reduce number of courses with focus in geology, engineering and technology and replace them with typical 3<sup>rd</sup> /4<sup>th</sup> year chemistry courses particular in the area of organic/synthetic course and synthetic chemistry (such as biochemistry, heterocyclic chemistry, synthetic methodology, medicinal chemistry etc.).

## Principle 2: Quality Assurance Policy of the Institution and the Academic Unit

The Institution should have in place an accredited Internal Quality Assurance System, and should formulate and apply a Quality Assurance Policy, which is part of its strategy, specialises in the operation of the new academic units and the new study programmes, and is accompanied by annual quality assurance goals for the continuous development and improvement of the academic units and the study programmes.

*The quality assurance policy of the Institution must be formulated in the form of a published statement, which is implemented by all stakeholders. It focuses on the achievement of special annual quality goals related to the quality assurance of the new study programme offered by the academic unit. In order to implement this policy, the Institution, among others, commits itself to put into practice quality procedures that will demonstrate: the adequacy and quality of the academic unit's resources; the suitability of the structure and organisation of the curriculum; the appropriateness of the qualifications of the teaching staff; the quality of support services of the academic unit and its staffing with appropriate administrative personnel. The Institution also commits itself to conduct an annual internal evaluation of the new undergraduate programme (UGP), realised by the Internal Evaluation Group (IEG) in collaboration with the Quality Assurance Unit (QAU) of the Institution.*

*The quality assurance policy of the academic unit includes its commitment to implement quality procedures that will demonstrate: a) the adequacy of the structure and organisation of the curriculum, b) the pursuit of learning outcomes and qualifications in accordance with the European and National Qualifications Framework for Higher Education, c) the promotion of the quality and effectiveness of the teaching work, d) the adequacy of the qualifications of the teaching staff, e) the promotion of the quality and quantity of the research work of the members of the academic unit, f) the ways of linking teaching with research, g) the level of demand for graduates' qualifications in the labour market, h) the quality of support services, such as administration, libraries and student care, i) the implementation of an annual review and audit of the quality assurance system of the UGP through the cooperation of the Internal Evaluation Group (IEG) with the Quality Assurance Unit (QAU) of the Institution.*

### **Relevant documentation**

- Revised Quality Assurance Policy of the Institution
- Quality Assurance Policy of the academic unit
- Quality target setting of the Institution and the academic unit (utilising the S.M.A.R.T. methodology)

### **Study Programme Compliance**

In accordance with the ongoing process of evaluation, accreditation and designed quality scheme, the Department has instituted a functional team known as internal evaluation committee (OMEA). This team is linked to Central Quality organization of the institution (MODIP) chaired by Vice Rector Prof. Kalliopi Makridou. Quality plan is in place since 2019. Annual targets and reports are uploaded to recently (2022), built QMS Central web platform.

The Department's mission is reflected in the structure and the expected outcomes of the undergraduate programme of studies. The programmes of study are fit for purpose.

The study programme undergoes annual reviews by the Undergraduate Studies and Study Guide Writing Committee that oversees the curriculum and the textbook selection. OMEA

presented to AP a plan of annual review of study programme. Reviews are initiated by students' comments and internal performance evaluation results.

Measurable and achievable goals are set, which are monitored against well-specified performance indicators (KPIs) and disseminated to stakeholders and the wider society.

The qualifications of the teaching staff are in general of high quality and there is a notable number of highly dedicated individuals.

Effective efforts are made to ensure and promote the quality and value of teaching by applying adequate methods of teaching and implementing student-centered learning processes as described in departments study guide.

There are links between education and research, mostly at the Diploma Thesis stage and during the two Specialization Streams of the programme (7th-8th semester). Similarly, there is a strong link between education and the workplace through placements, visits, and other interactions.

Based on stakeholder and students' interviews, the AP concluded that the level of demand for qualified graduates in the labour market is targeted toward academic careers, oil industry, food industry, pharmaceutical industry at National and EU level.

The level of teaching, pastoral, and administrative support available to the students is deemed highly satisfactory.

The panel finds that the Department has established a quality assurance policy that is fully compliant with the corresponding principle.

### Panel Judgement

<b>Principle 2: Quality assurance policy of the Institution and the academic unit</b>	
Fully compliant	<b>X</b>
Substantially compliant	
Partially compliant	
Non-compliant	

### **Panel Recommendations**

- The practical training should either be made mandatory or be offered to all students who wish to participate in the experience.
- The interactions with future alumni should be exploited as a potential means of informing the decision-making process as regards future direction.
- A dedicated alumni portal may be developed in the future to promote post-graduation interactions. This community may contribute to the Department's financial support and could facilitate important networking interactions among graduates.
- The level of teaching would benefit from faculty specializing in organic and synthetic chemistry in the case of upper undergraduate courses and diploma theses.

### **Principle 3: Design, Approval and Monitoring of the Quality of the New Undergraduate Programmes**

Institutions should design the new 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.

*The Institutions develop their new undergraduate study programmes, following a well-defined procedure. The academic profile, the identity 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 European and National Qualifications Framework for Higher Education are described at this stage. An important new element in the structure of the programmes is the introduction of courses for the acquisition of digital skills. The above components should be taken into consideration and constitute the subject of the programme design, which, among other things, should include: elements of the Institution's strategy, labour market data and employment prospects of graduates, smooth progression of students throughout the stages of the programme, the anticipated student workload according to the European Credit Transfer and Accumulation System (ECTS), the option of providing work experience to the students, the linking of teaching and research, the international experience in study programmes of similar disciplines, the relevant regulatory framework, and the official procedure for the approval of the programme by the Institution.*

*The procedure of approval or revision of the programmes provides for the verification of compliance with the basic requirements of the Standards by the Quality Assurance Unit (QAU).*

#### **Relevant documentation**

- *Senate decision for the establishment of the UGP*
- *Curriculum structure: courses, course categories (including courses for the acquisition of digital skills), ECTS awarded, expected learning outcomes according to the EQF, internship, mobility opportunities.*
- *Labour market data regarding the employment of graduates, international experience in a related scientific field.*
- *Student Guide*
- *Course outlines*
- *Teaching staff (list of areas of specialisation, its relation to the courses taught, employment relationship)*
- *QAU minutes for the internal evaluation of the new study programme and its compliance with the Standards*



## **Study Programme Compliance**

The objective of the Department of Chemistry is in very good level in both teaching the science by the faculty and learning the subjects by the students. In the three-year period, the department generally has been successful in educating the undergraduate students who after completion of their education compare with undergraduate students from other chemistry departments in Greece. Their training and success in post-graduate education will be the major criterion of success. The lack of a national or international testing like the Graduate Record Examination, (GRE) makes it difficult to quantify their excellence and compare them to undergraduate students from other international institutions.

The structure of the curriculum is similar but not fully satisfactory to the one used successfully in other internationally recognized excellent departments. The attendance of lectures is not mandatory and generally is satisfactory. The undergraduate laboratory training is mandatory and successful. The material used in the classrooms and the laboratories is updated regularly and consequently the curriculum is kept current and successful.

The best description of the undergraduate instruction is transparency and the methods used in the classroom concerning teaching and testing are decided by the instructors. The professors that teach the undergraduate courses have been associated with other Universities in Greece and consequently, the flexibility of the undergraduate program reflects their past experiences. The undergraduate students are encouraged to participate in technical training in industry. This practice has been successful and should continue. It connects the younger chemists with the realistic association of their chosen science to society and allows for their employers to evaluate their future potential employment.

As such the training of undergraduate students produces chemists who adequately meet the needs of Greek academic institutions and Chemical industry and the curriculum is compared with appropriate, universally accepted standards for the specific area of study. The structure of the curriculum rational is clearly articulated as shown by the orderly operation of the classroom and laboratory instruction and availability of study guides, based on syllabus. The curriculum is coherent and functional. The material for each course is appropriate and the time offered sufficient. The Department has the necessary resources and appropriately qualified and trained staff to implement the curriculum. Although the departmental facilities are located in old buildings, they provide classrooms and laboratories of high quality. The same is also true for modern instrumentation, library, and study halls. A group of exceptional instructors that supervise the laboratories have been in the department for many years, enjoy their duties and are very effective. This is apparent in their popularity to the students and faculty. Emphasis must be placed in the need of research instrumentation. The available space should be renovated and filled with new "state of the art" instrumentation. We strongly recommend that the administration makes certain that in the renovated spaces of the department new instrumentation for teaching and research will be purchased.

The program has been design based on appropriate standards. However, the third/forth year courses have to be modified/revised to meet the criteria of more specialized courses in the

fields of Physical Chemistry, Analytical Chemistry, Organic Chemistry, Inorganic Chemistry, Biochemistry and Food Chemistry (elective).

The structure of the programme rational needs minor modification as mentioned above. This will be easily achieved with the new two Faculty members that are expected to join the Department.

The certificate on Oenology must be awarded, taking into consideration the local opportunities and the professional rights of Chemists (Petros Sotiriou).

### Panel Judgement

<b>Principle 3: Design, approval and monitoring of the quality of the new undergraduate programmes</b>	
Fully compliant	
Substantially compliant	<b>X</b>
Partially compliant	
Non-compliant	

### Panel Recommendations

None.

## Principle 4: Student-centred Approach in Learning, Teaching and Assessment of Students

The academic unit should ensure that the new 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.

*In the implementation of student-centered learning and teaching, the academic unit:*

- ✓ *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 application of 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*

### **Relevant documentation**

- *Questionnaires for assessment by the students*
- *Regulation for dealing with students' complaints and appeals*
- *Regulation for the function of the academic advisor*
- *Reference to the planned teaching modes and assessment methods*

### **Study Programme Compliance**

#### **I. Findings**

The Department has developed flexible learning methods, in order to accommodate the needs of students with emphasis given on the online material in slides- videos. Most, if not all, courses are taught with multiple delivery modes that go beyond the standard lecture-based format to also include lab exercises, individual/group projects and lastly various audience-engaging techniques such as online click questions. In addition, laboratory courses make use of online tests in order to better prepare the students for upcoming assignments. The students feel respected and included in the teaching process and appreciate that faculty members understand their needs and possible knowledge gaps. Further to demonstrate that fact, exam schedules are published well in advance of the exam period, accommodating the student's need for proper preparation. Lastly, the department organizes a first-year orientation ceremony, emphasizing its commitment to student satisfaction and integration.

Course evaluations, in the form of questionnaires, are conducted at the end of the semester for all courses. The questionnaires include mostly general satisfaction questions, as well as open-ended questions for the students to make suggestions on. Statistics from these evaluations are generally considered by the Internal Evaluation Unit. Also, the statistics and the comments are available to each teacher so as to better understand the improvements that

are needed in the teaching process. Student participation is very high, verifiable by the fact that the student questionnaires are being completed in the last weeks of the semester where attendance presumably reaches its lowest point. A reasonable assumption that can be made is that those questionnaires are being filled by students with a better understanding of each course, and thus the results are quite reliable. Course assessment criteria are made available to all students at the start of each semester and are available in each course's webpage ("course outline") as well as in the study guide.

A procedure is in place to handle student complaints about academic matters, student services or harassment. The formal complaints of students are handled with the help of the Academic Advisor in the first stage and, if required, directly with the assistance of the Department Head. Furthermore, the institution of the Academic Advisor is implemented. Students get assigned a member of the teaching staff that serves as their academic advisor throughout their studies. In principle there is a procedure for regular meetings and monitoring of a student's progress via regular reports.

Participation and representation of students in the Department such as within the general assembly of the Department are, in principle, in place but student representation has been hampered by the absence of elected representatives of the student body.

Lastly, during the interview process there was widespread enthusiasm for the active participation of students in research projects, particularly within the relevant mandatory course. Students expressed their satisfaction for that possibility.

## **II. Analysis**

In terms of the programme of study, the students have the flexibility to choose from a variety of courses after their third year of study (semester 6). The combination of compulsory and elective courses forms the basis for the development of the two specialisation areas (κατευθύνσεις); each student is given both options. It should be noted that while that means that they must complete the compulsory courses of the chosen area, their elective courses are not restricted to those that fall within that area, providing additional flexibility.

An additional way that the department can improve in its approach of student-centred learning is to establish procedures for formal student input in each course's material, with the possible use of the already established student questionnaire. This procedure, with proper guidance from the course instructor, could enable students to select course components such as, e.g., project topics, according to their interest. Particularly in elective courses offered the senior years of the undergraduate program.

Course evaluations by the students are an essential part of the program. It is deemed important that a high participation rate be maintained and a procedure in place for the teaching instructor to modify and improve the course based on the students' feedback.

The Department's initiative to put in place a formal procedure by which students can communicate their complaints is good and shows that the Department wants to hear from its students. Further to encourage student participation in the learning process, formal student participation in the Internal Evaluation Unit through their elected representatives could

provide feedback from senior students on earlier courses aiming at improving student progression and proper assimilation of learning outcomes.

Having access to the Academic Advisor is a good way for helping students understand their degree programs and navigate through the various science/research topics and career opportunities. In addition, the advisors can monitor the students' progression throughout the programme and provide informed guidance. This role can help both incoming students as well as senior students that try to decide between the various elective courses, topics for possible thesis, and graduate studies. A concern with the institution of the Academic Advisor is the degree of acceptance by the student body.

### III. Conclusions

The Department has gone to great lengths in addressing student needs. Teaching practices are adapted to student needs, while course assessment is based on several components, including group or individual projects, midterm exams, and finals. The students feel included in the learning process and teachers have shown flexibility and significant concern in filling the student's knowledge gaps. Offering a choice to students to select their own topics for course and thesis projects puts the students in the very centre of the learning process. The Department is in the process of offering such choices in specific courses, which are greatly appreciated by the student body.

#### Panel Judgement

<b>Principle 4: Student-centred approach in learning, teaching and assessment of students</b>	
Fully compliant	<b>X</b>
Substantially compliant	
Partially compliant	
Non-compliant	

#### Panel Recommendations

- Establishing procedures for formal student input in the course material or using the already established student questionnaire. It would show the students the importance of their education and put them in the very centre of the learning process.

- A formal procedure needs to be established and implemented for student feedback about the undergraduate program, perhaps in the form of student participation in the Internal Evaluation Unit, or a special subsection of the Unit concerning strictly the UGP. Neither the course evaluation forms filled-out by the students nor the student complaints procedure can serve that role to the extent it is required.
- The Department should consider the establishment of merit-based annual awards, ideally in the form of a monetary prize externally or internally funded. It is viewed that such a measure will certainly increase the zeal shown by individual students to achieve excellence and in consequence improve their absorption of the curriculum.
- Whilst numerous career events may be organized, a more concise career orientation event organized by the department, along the lines of the similar first-year orientation may perhaps provide the necessary clarity to senior students towards their next steps.
- The Department should consider the establishment of academic group competitions within courses with a group project character, as a way of encouraging student interaction, participation and zeal.

## **Principle 5: Student Admission, Progression, Recognition of Academic Qualifications and Award of Degrees and Certificates of Competence of the New Study Programmes**

**Academic units should develop and apply published regulations addressing all aspects and phases of studies of the programme (admission, progression, recognition and degree award).**

*All the issues from the beginning to the end of studies should be governed by the internal regulations of the academic units. Indicatively:*

- ✓ *the registration procedure of the admitted students and the necessary documents - according to the law - and the support of the newly admitted students*
- ✓ *student rights and obligations, and monitoring of student progression*
- ✓ *internship issues, granting of scholarships*
- ✓ *the procedures and terms for writing the thesis (diploma or degree)*
- ✓ *the procedure of award and recognition of degrees, the duration of studies, the conditions for progression and assurance of the progress of students in their studies*

*as well as*

- ✓ *the terms and conditions for enhancing student mobility*

*Appropriate recognition procedures rely on relevant academic practice for recognition of credits among various European academic departments and Institutions in line with the principles of the Lisbon Convention on the Recognition of Qualifications concerning Higher Education in the European Region. 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).*

*All the above must be made public within the context of the Student Guide.*

### **Relevant documentation**

- *Internal regulation for the operation of the new study programme*
- *Regulation of studies, internship, mobility and student assignments*
- *Printed Diploma Supplement*

*Certificate from the President of the academic unit that the diploma supplement is awarded to all graduates without exception together with the degree or the certificate of completion of studies*

### **Study Programme Compliance**

B11. is the guide that has an overview of

-the department's requirements for graduation

-the grade system

-conditions for the transfer of ECTS from other Universities

- course evaluation procedures
- curriculum (with mandatory and elective courses)
- link to the description of courses
- rules for undergraduate thesis projects
- counselling services provided
- academic calendar
- general information about ERASMUS+
- and contact details for further assistance.

-The students should be encouraged to be able to display interests in the affairs of the Department and the research interest of the faculty members.

-Because the number of students it is very high the Department should offer limited administrative duties to new assistant professors so they can establish their research laboratories.

-Develop ways to allow opportunities for experienced research-active faculty to initiate collaborative actions with the Faculty members of the department. This will allow for new ideas for improving teaching practices in both the undergraduate and graduate level and also develop new research joint opportunities.

-The Department should establish the concept of joint faculty appointments with other Departments of the University.

-On an annual basis, external evaluators should monitor the research performance of the Faculty of the Department. This way the progress from the TEI to University transition will be evaluated.



## Panel Judgement

<b>Principle 5: Student admission, progression, recognition of academic qualifications, and award of degrees and certificates of competence of the new study programmes</b>	
Fully compliant	
Substantially compliant	<b>X</b>
Partially compliant	
Non-compliant	

## Panel Recommendations

The departmental guide (document B11) needs to be supplemented with the following:

- the procedures and terms for writing the undergraduate thesis.
- the terms and conditions for enhancing student mobility (giving more details for how student can participate in Erasmus+. This information is available in B20, page 2, paragraph 4).
- concise descriptions of courses offered.

## **Principle 6: Ensuring the Competence and High Quality of the Teaching Staff of the New Undergraduate Study Programmes**

**Institutions should assure themselves of the competence, the level of knowledge and skills of the teaching staff of the academic units, and apply fair and transparent processes for their recruitment, training and further development.**

*The Institution should attend to the adequacy of the teaching staff of the academic unit, the appropriate staff-student ratio, the suitable categories of staff, the appropriate subject areas and specialisations, the fair and objective recruitment process, the high research performance, the training – development, the staff development policy (including participation in mobility schemes, conferences and educational leaves- as mandated by law).*

*More specifically, 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**

- *Procedures and criteria for teaching staff recruitment*
- *Regulations or employment contracts, and obligations of the teaching staff*
- *Policy for staff recruitment, support and development*
- *Performance of the teaching staff in scientific-research and teaching work, also based on internationally recognised systems of scientific evaluation (e.g., Google Scholar, Scopus, etc.)*

### **Study Programme Compliance**

The Department has adopted a series of well-defined procedures as imposed by state law to recruit and hire qualified teaching staff. The processes used are transparent and viable within the local reality. One needs to take into account that the competitive and cutting-edge nature of any Department in the realm of research and teaching is developed by fostering and recruiting excellence that does not always necessarily reside within the Department.

The EEAP is not aware of any apparent mechanisms for rewarding excellence in teaching. Alternatively, research may be rewarding via indirect gratification channels when funding is received, and quality research is published in high impact journals.

In terms of channels of encouraging scholarly activity to strengthen teaching by linking it to research, the EEAP was exposed to one fine example of such an initiative that was done on an ad hoc basis and purely based on the motivation of the individual faculty. As an example, undergraduate students are exposed to modern advanced instrumentation or other relevant activities.

The research output of the Department is aided by the fact that research active faculty has access to highly motivated and qualified final year chemistry students that are working on their optional graduation theses. This is an indispensable asset that offers many tangible benefits with continuing efforts to further promote its vital nature.

The role of the students in promoting quality assurance for all staff is seen as very important in determining its effectiveness. Consequently, the students should be encouraged and empowered so as to be able to display an active interest in the affairs of the Department within the realm of quality indicators of its staff.

With the exception of two cases that really stand out, the metrics of the research output (B23a) are not on par with other chemistry departments in Greece. In the last 5 years no original papers in organic and synthetic chemistry seem to have been published in main journals like J. Org. Chem, Org. Lett. Eur. J. Org. Chem or more generally in J. Am. Chem. Soc., Eur. J. Chem, Chem. Comm., Angew. Chem. Int. Ed. Eng. etc. by the department (B23b).

#### Panel Judgement

<b>Principle 6: Ensuring the competence and high quality of the teaching staff of the new undergraduate study programmes</b>	
Fully compliant	
Substantially compliant	<b>X</b>
Partially compliant	
Non-compliant	

#### Panel Recommendations

- It is highly recommended that the Department adopts a policy of looking outside its own confines for recruiting new outstanding talent. Mobility of both students and scientific personnel should be strongly encouraged. On the other hand, continuation of the studies in a single Institution with the aim to secure a professional position should be strongly discouraged. In addition, conflicts of interest during recruitment should be avoided.

- It is highly recommended that the Department adopts a policy of promoting and rewarding initiatives by encouraging scholarly activity that strengthens teaching and its link to research.
- Excellence should be rewarded for teaching and service. The AP is not aware of any such formal mechanisms in place. It is recommended that a process of peer evaluation system is adopted that allows for a frank and collegial input on an annual basis. For instance, the students could be asked each year to recommend a professor based on his/her teaching service. These nominations can help select and reward the “Teacher of the Year”. Similarly, administrative personnel and related professionals who perform an outstanding service could be rewarded with an “Exemplary Service Award”.
- To gain visibility as a Chemistry Department it needs to find ways and provide motivation to publish in mainstream journals of Chemistry.

## Principle 7: Learning Resources and Student Support of the New Undergraduate Programmes

Institutions should have adequate funding to meet the needs for the operation of the academic unit and the new study programme as well as the means to cover all their 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 resources, on a planned and long-term basis, to support learning and academic activity in general, in order to offer students the best possible level of studies. The above means include facilities such as, the necessary general and specific libraries and possibilities for access to electronic databases, study rooms, educational and scientific equipment, information and communication services, support and 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 students, students with disabilities), in addition to 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. Students should be informed about all available services. In delivering support services, the role of support and administration staff is crucial and therefore this segment of staff needs to be qualified and have opportunities to develop its competences.*

### Relevant documentation

- Detailed description of the infrastructure and services made available by the Institution to the academic unit to support learning and academic activity (human resources, infrastructure, services, etc.) and the corresponding specific commitment of the Institution to financially cover these infrastructure-services from state or other resources
- Administrative support staff of the new undergraduate programme (job descriptions, qualifications and responsibilities)
- Informative / promotional material given to students with reference to the available services

### Study Programme Compliance

The overarching principle in the teaching philosophy of the department is to provide basic knowledge of chemistry through core courses in the first two years to be followed with specialized courses in the fields of chemistry and technology of materials and petroleum chemistry and technology in the third and fourth year. Teaching methods used, course updates, student participation, grades, and average duration for the undergraduate degree. Teaching methods employ the traditional classroom lectures based on white board facilities and state of the art tools that include laptops with projection facilities, wireless internet, video recording of lectures and their use in webinars. Faculty members of the Chemistry Department use popular modern textbooks in several core areas, and these textbooks are widely used throughout all academic institutions in Greece. Course lectures, notes, homework assignments and solutions are also made available through the faculty and departmental website. The teaching staff for course work consists of about 19 faculty members. The teaching

staff/student ratio for laboratory work is favourable (1/10) for a laboratory course with 20 positions. The teaching staff members for course work and laboratory work are available to the students not only through regularly scheduled office hours but also on demand at any requested time by the students. The faculty have on average 6 hrs /week for teaching duties which is an appropriate teaching assignment. Teacher/student collaboration, according to the interview with the students is highly satisfactory. Adequacy of means and infrastructure resources. The Chemistry department has access to impressive facilities that are regarded as state of the art based on international standards. Both the classrooms and the teaching laboratories are properly equipped, are quite spacious, and can accommodate future faculty additions. Furthermore, a modern reading facility with wireless internet access is available on a 24-hour basis and can meet the demands of over 200 students. Use of Internet resources is widely spread, including online bibliographic databases, electronic books, wireless internet access, video recording, and webinars. A separate computational facility with about 25 personal computers in a local area network is available to the students. This departmental computational laboratory has room for improvement. For the examination system and assessment of course work by the students. Multiple methods of assessing students are applied: assessing the performance of students in each class is carried out through written, or written plus interim exams at the discretion of the instructor. There is a student questionnaire for the assessment of the quality of each course. Of profound importance is the availability of sufficient administrative staff (Dept. secretary and computer/server excellent technical support).

The teaching methods are highly commended, and this reflects, the experience and dedication for excellence of the teaching staff. It was also pointed out unanimously during the interview with the undergraduate students. As a result, the quality of teaching is regarded as high. Quality and adequacy of teaching materials and resources. The teaching material and resources are appropriate, updated frequently with international standards, and serve well the departmental mission for excellence. Quality of course material. The lectures in all courses are revisited and updated annually, and the quality of the course material is regarded as high. During the fourth year of undergraduate studies, the students are exposed to research through the dissertation. Also, during the industrial practical activity students are involved in applied research. It will be beneficial to a select number of students in their third year of studies, to have a formal option to join a research laboratory for research. One option is to introduce it in the curriculum as independent research with credit for a course. Another option is to provide modest stipends upon availability of funds. The department has numerous collaborations with academic and research institutions within Greece and abroad, and the programs ERASMUS and had strong participation by faculty members and students. These efforts are encouraged to be maintained in the future. Evaluation by the students of (a) the teaching and (b) the course content and study material/resources. The evaluation of the students during the interview was very positive on both aspects. The formal evaluation process through a questionnaire presented to the students, at the end of each course could benefit from a more systematic process that will be done via access to a secure internet university site at which each student will provide his/her comments anonymously. It is also suggested that the undergraduate

students create awards for the best teaching staff members annually, where the nomination, assessment and selection process is student controlled exclusively. The industrial collaborators of the Department of Chemistry expressed their support in providing awards for the best three academic performances, based only in the final grades on courses, for each year of study. Therefore, a total of 12 (3x4 years) awards (800-1000 euro/each) will be provided by the industrial partners every year to the Department of Chemistry.

IMPROVEMENT. Even though the Chemistry department is in an excellent position in regard to the TEACHING component (see aforementioned discussion), the faculty members and teaching laboratory personnel are eager to introduce the most modern teaching methods and tools. They also aim at maintaining the very good teaching staff/student ratios and at improving the interactions among faculty, undergraduate and graduate students. The department has introduced the faculty advisor system and each faculty member is assigned about 20 students who are guided throughout the duration of their studies. Also, each course introduces a web site that provides all relevant teaching material. An improved computational laboratory will enhance the modelling and computational component of teaching which complements the experimental component. Towards improving the quality and conditions, the admitted students need to receive fellowships that will alleviate the financial issue and allow them to participate in research projects. This is not a direction that the department can address in its totality, and requires the attention and consistent action of the ministry of education.

### Panel Judgement

<b>Principle 7: Learning resources and student support of the new undergraduate programmes</b>	
Fully compliant	<b>X</b>
Substantially compliant	
Partially compliant	
Non-compliant	

### Panel Recommendations

None.

## Principle 8: Collection, Analysis and Use of Information for the Organisation and Operation of New Undergraduate Programmes

The Institutions and their academic units 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.

*Effective procedures for collecting and analysing information on the operation of Institutions, academic units and study programmes feed data into the internal quality assurance system. The following data is of interest: key performance indicators for the student body profile, student progression, success and drop-out rates, student satisfaction with the programme, availability of learning resources and student support. The completion of the fields of National Information System for Quality Assurance in Higher Education (NISQA) should be correct and complete with the exception of the fields that concern graduates in which a null value is registered.*

### Relevant documentation

- *Report from the National Information System for Quality Assurance in Higher Education (NISQA) at the level of the Institution, the department and the new UGP*
- *Operation of an information management system for the collection of administrative data for the implementation of the programme (Students' Record)*
- *Other tools and procedures designed to collect data on the academic and administrative functions of the academic unit and the study programme*

### Study Programme Compliance

### Study Programme Compliance

#### I. Findings

IHU maintains a centralised information system to manage the Quality Assurance process, including the collection of all results and data from the student satisfaction and course evaluation surveys. Course evaluation surveys are conducted regularly and anonymously at the end of each semester for all courses and teaching staff, with the use of online evaluation forms, with student participation rates in satisfactory levels, although total numbers are low. There is an ad hoc process for analysing and acting upon the evaluation results; however, the post processing and thorough examination and understanding of the results is rather limited, probably due to insufficient data accumulation.

MODIP and the Internal Evaluation Unit are mainly responsible for the operation of the QA associated systems. Information and data on faculty performance analysis, administrative support, funding, etc. is also under regular monitoring.

The Department is undergoing a major transition and steps have been made in the right direction. To that end, it is expected that the Department will be able to identify and document sufficient key performance indicators (KPIs), such as career paths, student retention/progression, completion rates, etc. in the forthcoming years.



## II. Analysis

A sufficient range of information is provided for the needs of the National Information System for Quality Assurance in Higher Education (NISQA) based on the data available. However, the data available at the department level are limited to one academic year (2019-2020) as they are reported in subsection B24 of the proposal, whilst the program has been running for 3 full academic years.

Following the collection of the student satisfaction and course evaluation surveys in the central Institutional System, the results are forwarded to each teaching staff for the courses they taught, to analyse them and take further actions towards the evolution of their courses. An ad-hoc internal process for analysing them and acting based on the evaluation is also in place, but the Department has no formal process to have an overview of the evaluation of all results at UGP level, identifying potential best practices, areas of weaknesses in terms of the different UGPs, and the potential UGPs improvements, which might take place.

The Department maintains sufficient processes for the analysis and evaluation of data related to the availability and accessibility of resources (equipment, social services, IT facilities etc.), as these are defined at Institutional level.

## III. Conclusions

The Department performs analysis of the collected course evaluation forms at teachers' level only, and has not yet documented processes to identify potential areas of improvement based on other levels, such as at courses (when there are more than one teaching staff in one course or Laboratory course), curriculum semester or year of studies, UGP's, etc.

Although the Department is still in transition and the new programme has only been in place for three years, there is confidence that it will be able to extend its pool of key performance indicators (KPIs), with new ones, such as career paths, student retention/progression, completion rates, and so on, in the forthcoming years.

### Panel Judgement

<b>Principle 8: Collection, analysis and use of information for the organisation and operation of new undergraduate programmes</b>	
Fully compliant	<b>X</b>
Substantially compliant	
Partially compliant	
Non-compliant	

### **Panel Recommendations**

- The Department must in association with MODIP, ensure that regular data are collected and provided for the needs of the National Information System for Quality Assurance in Higher Education.
- The Department, which is expecting its first UGP graduates at the end of this academic year, is encouraged to set up and apply well-defined processes, which may be communicated to their graduating students in advance, to maintain sufficient data and statistics regarding employability of graduates and UGP effectiveness. It is also worth considering and defining and documenting the regular support of an Alumni body for UGP reviewing purposes, as well.
- The Department may further enhance the analysis of data from student and staff surveys towards UGP's continuous improvement and further raise their contribution to the UGP's quality assurance. This may be achieved by setting clear quality indicators at the course level, along the lines of the departments stated quality goals as they have been documented in subsection B9.

## Principle 9: Public Information Concerning the New Undergraduate Programmes

Institutions and academic units should publish information about their teaching and academic activities in a direct and readily accessible way. The relevant information should be up-to-date, clear and objective.

*Information on the Institutions' activities is useful for prospective and current students, graduates, other stakeholders and the public. Therefore, Institutions and their academic units must provide information about their activities, including the new undergraduate programmes they offer, the intended learning outcomes, the degrees awarded, the teaching, learning and assessment procedures used, the pass rates and the learning opportunities available to their students. Information is also provided, to the extent possible, on graduate employment perspectives.*

### Relevant documentation

- *Dedicated segment on the website of the department for the promotion of the new study programme*
- *Bilingual version of the website of the academic unit with complete, clear and objective information*
- *Provision for website maintenance and updating*

### Study Programme Compliance

- The Department has developed a website that contains all information regarding its educational and research activities. The information is well categorized and easily accessible. Pertinent student-related information is available (study program, classes, news and events). There is also bilingual version of the website with complete, clear and objective information.
- The Department has an extensive network of external stakeholders, some of whom are actively involved in its activities. All the stakeholders with whom the panel interacted expressed their willingness to help the Department achieve its goals.
- The Department participates in various educational and outreach activities including industry visits, educational trips, public talks by staff etc. All these activities are advertised in the departmental site.

### Panel Judgement

Principle 9: Public information concerning the new undergraduate programmes	
Fully compliant	X
Substantially compliant	
Partially compliant	
Non-compliant	

### **Panel Recommendations**

- The curriculum vitae of all staff members must be more detailed and well informed.
- The panel is of the opinion that establishing an External Advisory Board with selected members from the pool of future alumni, local industry, other stakeholders, and the wider scientific community, will be beneficial to the Department and have a societal impact.

## Principle 10: Periodic Internal Review of the New Study Programmes

Institutions and academic units should have in place an internal quality assurance system, for the audit and annual internal review of their new 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 the new study programmes aim at maintaining the level of educational provision and creating 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.*

### **Relevant documentation**

- *Procedure for the re-evaluation, redefinition and updating of the curriculum*
- *Procedure for mitigating weaknesses and upgrading the structure of the UGP and the learning process*
- *Feedback processes on strategy implementation and quality targeting of the new UGP and relevant decision-making processes (students, external stakeholders)*
- *Results of the annual internal evaluation of the study programme by the QAU and the relevant minutes*

### **Study Programme Compliance**

Documents B24b,c are presumably the numerical data of the internal QAU with respect to the department and its undergraduate programme for the year 2020, respectively Document B25 gives the results of the only internal evaluation report.

Document B24c (M4.040) states that the department recommended 200 entrants per year and that this number was satisfied via the national entrance examinations. This number is considered about twice as large as appropriate according to members of the department during the accreditation procedure and should be lowered to 120 (B5, page 10).

Using the contents of B25 as a guide for what had been asked the following observations were made:

- Student evaluation forms have been developed (B16abcd). These are filled online, which facilitates their digital process. It seems that the evaluations were carried out once so far.
- Detailed descriptions of the courses have been compiled (B12).
- Regulations for taking an undergraduate project (8 ECTS) in lieu of lectures have been established and are laid out in B12b. Several students have enrolled in this kind of activity and

seem enthusiastic about it. This activity apparently started this semester (2022/2023) and no projects have been completed yet.

-The department has established a welcome day for its first-year students, and there are plans for summer schools.

-For the internal quality control at the departmental level there is OMEA which communicates with University's QAU (MODIP) as issues arise.

-Student counselling has been established at the departmental level (B18).

### Panel Judgement

<b>Principle 10: Periodic internal review of the new study programmes</b>	
Fully compliant	<b>X</b>
Substantially compliant	
Partially compliant	
Non-compliant	

### Panel Recommendations

- Student evaluations should continue regularly. For each course the results should be made available to all the participants after the semester is over and before the beginning of the next.
- Internal evaluations should continue regularly in a frequency deemed appropriate by the internal QAU (MODIP).

## Principle 11: Regular External Evaluation and Accreditation of the New Undergraduate Programmes

The new undergraduate study programmes should regularly undergo evaluation by panels of external experts set by HAHE, aiming at accreditation. The results of the external evaluation and accreditation are used for the continuous improvement of the Institutions, academic units and study programmes. 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 panel of independent experts. HAHE grants accreditation of programmes, based on the Reports submitted by the panels, 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 Standards, and as a catalyst for improvement, while opening new perspectives towards the international standing of the awarded degrees. Both academic units and institutions must consistently consider the conclusions and the recommendations submitted by the panels of experts for the continuous improvement of the programme.*

### **Relevant documentation**

- *Progress report on the results from the utilisation of the recommendations of the external evaluation of the Institution and of the IQAS Accreditation Report.*

### **Study Programme Compliance**

This is the first external evaluation of the department.

Being a first it required an extra effort on part of the faculty members, who went the “extra mile”. This effort is appreciated greatly by the committee. The submitted folder contained files numbered B0. xx – B32.xx (omitting B27) for a total of >1100 pages with B0 the table of contents with a short descriptive title per file.

HAHE in document B32 (“ΕΝΗΜΕΡΩΤΙΚΟ ΣΗΜΕΙΩΜΑ ΤΗΣ ΕΘΑΑΕ ΠΡΟΣ ΤΗΝ ΕΕΑΠ”) claims that documents

B2, B11, B12, B19, B20, B30 are either partially or non-compliant according to HAHE’s standards.

However, these standards have not been provided to the panel and it is not possible to arrive at an objective conclusion. The contents of B2, B11, B12, B19 and B20 are discussed and evaluated elsewhere in the report. Careful inspection of B30 a, b, c, d documents show that these are indeed samples of Diploma Supplements of the previous programme(s). Perhaps the issue raised by HAHE is that the Diploma is issued in the name of the Department of Chemistry, instead of the previous (now non-existing TEI entity).

The department stated that it will carefully consider any recommendations by the committee and respond appropriately.

Overall, both actions show the willingness of the department to participate in HAHE accreditations and follow its guidelines to the extent possible.

### Panel Judgement

<b>Principle 11: Regular external evaluation and accreditation of the new undergraduate programmes</b>	
Fully compliant	
Substantially compliant	<b>X</b>
Partially compliant	
Non-compliant	

### Panel Recommendations

Follow suggestions of HAHE or justify deviations.



## Principle 12: Monitoring the Transition from Previous Undergraduate Study Programmes to the New Ones

Institutions and academic units apply procedures for the transition from previously existing undergraduate study programmes to new ones, in order to ensure compliance with the requirements of the Standards.

*Applies in cases where the department implements, in addition to the new UGPs, any pre-existing UGPs from departments of former Technological Educational Institutions (TEI) or from departments that were merged / renamed / abolished.*

*Institutions should implement procedures for the transition from former UGPs to new ones, in order to ensure their compliance with the requirements of the Standards. More specifically, the institution and the academic unit must have a) the necessary learning resources, b) appropriate teaching staff, c) structured curriculum (courses, ECTS, learning outcomes), d) study regulations, award of diploma and diploma supplement, and e) system of data collection and use, with particular reference to the data of the graduates of the pre-existing UGP. In this context, the Institutions and the academic units prepare a plan for the foreseen transition period of the existing UGP until its completion, the costs caused to the Institution by its operation as well as possible measures and proposals for its smooth delivery and termination. This planning includes data on the transition and subsequent progression of students in the respective new UGP of the academic unit, as well as the specific graduation forecast for students enrolled under the previous status.*

### Relevant documentation

- *The planning of the Institution for the foreseen transition period, the operating costs and the specific measures or proposals for the smooth implementation and completion of the programme*
- *The study regulations, template for the degree and the diploma supplement*
- *Name list of teaching staff, status, subject and the course they teach / examine*
- *Report of Quality Assurance Unit (QAU) on the progress of the transition and the degree of completion of the programme. In the case of UGP of a former Technological Educational Institution (TEI), the report must include a specific reference to how the internship was implemented*

### Study Programme Compliance

The QAU/MODIP has drafted a detailed report on the transition period of the pre-existing undergraduate programme, until its completion.

In this case that the pre-existing study programme was delivered by a Technological Education Institution (TEI) a good effort has been made for the conduct of the practical training. However, the significant influence of the previous TEI structure on this chemistry department is still obvious.

Provisions have been made for the progression of students enrolled in the pre-existing study programme who wish to continue their studies in the new study programme.

The faculty (ΔΕΠ) seems to be eager to make this transition succeed as soon as possible.

According to the plan (B32) the transition is expected to complete by the end of the academic year 2026/7 the latest.

### Panel Judgement

<b>Principle 12: Monitoring the transition from previous undergraduate study programmes to the new ones</b>	
Fully compliant	
Substantially compliant	<b>X</b>
Partially compliant	
Non-compliant	

### Panel Recommendations

None.

## **PART C: CONCLUSIONS**

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

The Department has adopted a series of well-defined procedures as imposed by state law to recruit and hire qualified teaching staff. The processes used are transparent and viable within the local reality. One needs to take into account that the competitive and cutting-edge nature of any Department in the realm of research and teaching is developed by fostering and recruiting excellence that does not always necessarily reside within the Department.

The EEAP is not aware of any apparent mechanisms for rewarding excellence in teaching. Alternatively, research may be rewarding via indirect gratification channels when funding is received, and quality research is published in high impact journals.

In terms of channels of encouraging scholarly activity to strengthen teaching by linking it to research, the EEAP was exposed to one fine example of such an initiative that was done on an ad hoc basis and purely based on the motivation of the individual faculty. As an example, undergraduate students are exposed to modern advanced instrumentation or other relevant activities.

The research output of the Department is aided by the fact that research active faculty has access to highly motivated and qualified final year chemistry students that are working on their optional graduation theses. This is an indispensable asset that offers many tangible benefits with continuing efforts to further promote its vital nature.

The role of the students in promoting quality assurance for all staff is seen as very important in determining its effectiveness. Consequently, the students should be encouraged and empowered so as to be able to display an active interest in the affairs of the Department within the realm of quality indicators of its staff.

The submitted curriculum and the content of the courses for the first 6 semesters are largely on par with what is expected.

Student satisfaction with the teaching is very high.

Rules and regulations are available in the department's guide and on-line.

There exists an internal quality mechanism.

Strong in materials and analysis and in several aspects of engineering.

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

The number of senior Faculty has to be increased.

A small practical weakness is that a certificate of oenology will not be awarded by the department, because this is awarded from another department of IHE (presumably another

former TEI). In some respect the graduates will be at a disadvantage with respect to their colleagues graduating from other departments.

The biggest weakness and a critical one, is the almost complete lack of representation of Organic and more generally Synthetic Chemistry. According to the UNESCO definition, Organic chemistry is one of the three pillars for a Chemistry department. Given that synthetic chemistry, permeates the field of Inorganic Chemistry (the second of the three pillars, according to the UNESCO definition), it is clear that the department is deficient by 1/3 to 1/2 of what is expected. (Organic Chemistry is represented by just one faculty member, who is also rather close to retirement). This weakness in the field of organic chemistry, is reflected in the curriculum (4th year) by the complete absence of specialized courses in this area (such as biochemistry, heterocyclic chemistry, photochemistry, synthetic methodology etc). Unavoidably, this is also reflected in the output of research, as judged by the lack of relevant papers in the last 5 years.

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

Hire one senior Faculty in each Division.

Reduce the number of undergraduate students.

Establish an Advisory committee consisted of International recognized Chemists for monitoring the Progress of the Department in each Division for the transition from TEI to University. The annual reports of the Advisory committee and their recommendations can be used in the next five years for featured National evaluations.

The profile and mission of the department should be focused more on the fundamentals of the classically strategic areas of chemistry (e.g., organic, inorganic, physical chemistry, analytical chemistry, and biochemistry/food chemistry).

The number of faculty should be increased, and the number of undergraduate students should be reduced. For the next 5 years senior Faculty at the rank of Associate and Full Professor should be hired in the fields of Organic Chemistry, Physical Chemistry, Inorganic Chemistry, Analytical Chemistry and if possible, in Biochemistry/Food Chemistry.

The structure of studies in the third year could be improved with more emphasis on the fundamentals and less emphasis on rather superficial coverage of a variety of specialties.

It is highly recommended that the Department adopts a policy of looking outside its own confines for recruiting new outstanding talent. Mobility of both students and scientific personnel should be strongly encouraged. On the other hand, continuation of the studies in a single Institution with the aim to secure a professional position should be strongly discouraged. In addition, conflicts of interest during recruitment should be avoided.

It is highly recommended that the Department adopts a policy of promoting and rewarding initiatives by encouraging scholarly activity that strengthens teaching and its link to research.

Excellence should be rewarded for teaching and service. The AP is not aware of any such formal mechanisms in place. It is recommended that a process of peer evaluation system is adopted that allows for a frank and collegial input on an annual basis. For instance, the students could be asked each year to recommend a professor based on his/her teaching service. These nominations can help select and reward the “Teacher of the Year”. Similarly, administrative personnel and related professionals who perform an outstanding service could be rewarded with an “Exemplary Service Award”.

Upgrading a TEI to a University department is not easy. By analogy it is something like modifying a submarine to an airplane (or vice versa). The submarine is a massive machine designed to withstand high external pressure, so that it does not implode. By contrast, an airplane is designed to be “light” and withstand higher internal pressure, so that it does not explode. To “convert” a submarine to an airplane, one needs to do away with 9/10 of its mass, use different type of engines and add a couple of wings.

Despite significant progress, the previous program continues to cast a heavy shadow in the new one. In particular, the human resources in terms of expertise in organic (and more generally synthetic) chemistry need to be expanded significantly, if this is to become a Chemistry Department. This is going to take time and require the opening of additional positions for faculty, on top of those that will be “created” due to retirement of current members. These new positions should be filled mainly with organic chemists, preferably with expertise in synthesis, and not in other areas, as has happened with recent recruitments. Of course, recruiting synthetic chemists, means that some additional investment in infrastructure (i.e. NMR for people doing synthesis) will be necessary. Given the fact that hiring of faculty in Greece is a slow process, the recommendation of hiring 5-10 organic/synthetic chemists may need at least 5 years (or even more if appropriate funding is not available) to be fully developed. Around that time or a bit later a follow-up review would be appropriate.

-The study program must be strengthened in the areas of Organic Chemistry and Biochemistry and faculty members must be hired in these areas

-The student transfers from/to the Department must be allowed

- It is recommended to be established an External Advisory Board with selected members from the pool of future alumni, local industry, other stakeholders, and the wider scientific community

-It is advised that other directions must be created in the 7th and 8th semesters in addition to the two offered, for example in pharmaceutical chemistry and food chemistry

-It is strongly recommended that the certificate of Oenology must be awarded, so that graduates have the same professional rights as their colleagues from the rest of the other Chemistry Departments in Greece

-The panel recommends to the Department to develop a dedicated alumni portal in the future to promote post-graduation interactions. This community may contribute to the Department’s financial support and could facilitate important networking interactions among graduates.

#### IV. Summary & Overall Assessment

The Principles where full compliance has been achieved are: **1, 2, 4, 7, 8, 9, and 10.**

The Principles where substantial compliance has been achieved are: **3, 5, 6, 11, and 12.**

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

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

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

## The members of the External Evaluation & Accreditation Panel

Name and Surname

Signature

**1. Prof. Constantinos Varotsis (Chair)**

Cyprus University of Technology

**2. Prof. C. Takoudis**

University of Illinois Chicago

**3. Dr. P. Sotiriou**

Association of Greek Chemists

**4. Mr. K. Mataras**

University of Patras