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ΑΡΧΗ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ ΠΙΣΤΟΠΟΙΗΣΗΣ
ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΣΤΗΝ ΑΝΩΤΑΤΗ ΕΚΠΑΙΔΕΥΣΗ

HELLENIC REPUBLIC

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HELLENIC QUALITY ASSURANCE
AND ACCREDITATION AGENCY

Accreditation Report
for the Undergraduate Study Programme of:
Chemistry
Institution: University of Patras
Date: 24 – 03- 2019

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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 HQA to undertake the review of the Undergraduate Study Programme of Chemistry of the **University of Patras** for the purposes of granting accreditation

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PART A: BACKGROUND AND CONTEXT OF THE REVIEW

I. The Accreditation Panel

The Panel responsible for the Accreditation Review of the Undergraduate Study Programme of the Higher Education Institution named: **University of Patras (UoP)** comprised the following four (4) members, drawn from the HQA Register, in accordance with the Law 4009/2011:

- 1. Dimitri Coucouvanis, PhD (Chair)**
Professor Emeritus of Chemistry
Department of Chemistry,
University of Michigan, USA

- 2. Michail Chalaris, PhD**
Association of Greek Chemists, Greece
Hellenic Fire Service

- 3. Rodios Gamvros**
Hellenic Food Industry Federation, Athens, Greece

- 4. Emmanuel Theodorakis, PhD**
Professor of Chemistry
University of California San Diego, USA

II. Review Procedure and Documentation

Please refer briefly to the Panel preparation for the study programme review, as well as to the documentation provided and considered by the Panel. State the dates and of the site visit and describe the visit schedule and the meetings held. Feel free to mention any additional information regarding the procedure, as appropriate.

• General information and review material

The relevant review material was received by all members of the Accreditation Panel (AP) about 3 weeks prior to the accreditation process. Additional material with extensive detailed information concerning research and educational aspects/activities was received during the site visit.

• Dates of the site visit

The visit at the Chemistry Department, University of Patras (UoP) was carried out from Monday February 25, 2019 until Tuesday February 26, 2019.

• Committee meetings

On Monday February 25, 2019, a briefing took place at the ADIP offices from 9.30 to 11:00 am. Prof. Pantelis Kyprianos (President of ADIP) and Prof. Vassilios Tsiantos (Vice-President of ADIP) welcomed the committee. Prof. Tsiantos and Dr. Besta (General Director of ADIP) informed the AP committee about the overall goals of the visit. The committee was then transported to Patras, where they met with Profs. Christos Kordulis and Georgios Bokias. Following a tour of the campus of the University of Patras (UoP), the AP committee arrived at the Chemistry Department where they met with Prof. Nikos Karamanos (Vice Rector of Academic and International Affairs and President of MODIP) and Prof. Georgios Bokias (Chair of the Chemistry Department, UoP). Subsequently, the AP members also met Prof. Ioannis Giannikos and Prof. Athanasios Karalis (MODIP representatives) as well as Profs. Christos Kordulis, Georgios Bokias, Theodore Christopoulos, Dionissios Papaioannou and Spyridon Perlepes (OMEA representatives).

On Tuesday February 26, 2019, the AP members were transported to the Chemistry Department, UoP where they met with several Professors to discuss workload, interface between teaching and research and undergraduate curriculum development. Subsequently, they met several undergraduate and graduate students of the Department to discuss issues regarding their study experience and student welfare. The AP committee also visited the chemistry library and selected teaching and research facilities of the Department. In the afternoon, the committee had a video-conference with several alumni members of the Department to discuss professional development and career paths. The committee also met various stakeholders and social partners of the Department to discuss relations and networking between the University and the public/private sector. At 2:30 pm, the panel members met again with OMEA and MODIP representatives to discuss updates and clarifications and at 3:00 pm they made closing remarks to both MODIP/OMEA members, Profs. Karamanos and Bokias. For additional information on the AP committee meetings see Appendix 1.

Summary: The Department of Chemistry at UoP organized an extensive schedule that allowed meetings and discussions with members of all divisions of the Department. In the meetings held, the majority but not all members of the teaching staff or group leaders were able to participate. The AP committee had the opportunity to informally and briefly visit some undergraduate laboratories as well the chemistry library. The panel also met formally and informally with representatives of the students. Furthermore, the panel met with selected alumni, stakeholders and representatives of MODIP and OMEA from the UoP (Appendix 1).

III. Study Programme Profile

Please provide a brief overview of the Study Programme with reference to the following: history, academic remit, duration of studies, qualification awarded, employment opportunities, orientation challenges or any other key background information. Also you may provide a short description of the home Department and Institution, with reference to student population, campus or any other facts, as deemed appropriate.

Founded in 1966, the Department of Chemistry is one of the oldest Departments of the University of Patras, an institution with an acknowledged national and international reputation. It is located in the north-west side of the University Campus close to the University Hospital. The educational and research activities of the Department are concentrated in three connected buildings, known as "North" "South" and "Extension". These buildings are well equipped for the education/training of about 170 undergraduate students/year and include: one state-of-the-art amphitheater (capacity about 240 students), 2 main lecture rooms (capacity between 170-200 students each), 5 smaller lecture rooms (capacity between 50-100 students each) and 12 lab rooms (capacity about 40 students each). The buildings also contain one seminar room, one chemistry library, two multimedia rooms and computer-center, 17 labs for academic research and about 50 offices. All lecture rooms and labs are equipped with high-speed internet and audiovisual facilities. Additional academic and educational events are accommodated in the Conference and Cultural Center located nearby.

The Chemistry Department provides students with a full education in a broad range of subjects/skills associated with chemistry including biochemistry, chemical technology and food science. Its vision is to educate/train chemists by offering a blend of basic and specialized knowledge on topics on modern, theoretical and applied chemical sciences. The four-year degree qualifies its graduates for careers in the chemical industry, commercial research, analytical laboratories or secondary education. Post-graduate studies enable its students to pursue academic careers and/or further their industrial careers.

At the undergraduate level the Department collaborates with a large number of other European Universities through the ECTS-ERASMUS student exchange programme. Moreover, the majority of faculty members participate in joint research projects with scientists from other academic institutions and industry in Greece and around the world. Specifically, the Chemistry Department offers a rigorous undergraduate study programme that aims to educate a skilled workforce in the chemical sciences. Completion of the programme provides the necessary qualifications and scientific background for employment at a National and International level, thus addressing the needs of the local and broader economy. As such, the programme is of comparable structural depth and quality to its international peers. The structure of the Chemistry Department consists of three Divisions with laboratories: (a) Organic Chemistry Biochemistry and Natural Products; (b) Physical, Inorganic and Nuclear Chemistry; (c) Applied, Analytical and Environment Chemistry.

With regard to staff, the Department has a 49-member overall personnel that includes 34/9 academic /teaching staff and 6 administrative staff. 3 recent PhD recipients also contribute to the educational activities, while 3-4 additional temporary teaching positions are under consideration. The distribution (as of 31/08/2018) of trainees is as follows: 775 undergraduate students, 178 postgraduate students and 106 Ph.D. candidates. The overall duration of the undergraduate studies requires a minimum of 4 years (8 semesters total). The undergraduate programme consists of: (a) 26 obligatory classes/labs (core courses) that offer fundamental education/training on the main topics of modern chemical sciences including inorganic chemistry, organic chemistry, analytical chemistry, industrial chemistry, physical chemistry, environmental chemistry, food chemistry and biochemistry; (b) 17 elective classes that are grouped in two categories: (b1) 4 elective classes/labs that offer further education on the

above areas and introduction to various specific topics; the students can choose these 4 from a pool of 7 elective classes/labs; (b2) 4 or 5 elective classes/labs from a pool of 17 that offer further education on the above areas, introduction to various special topics and 2 elective classes/labs from a pool of 10 that offer education in areas without relation with Chemistry; and (c) and an obligatory diploma thesis. In total, the programme offers 60 courses and awarding the degree (B.Sc. in Chemistry) requires a total of 240 ECTS that can be acquired by completing all obligatory courses/labs (175 units), 10 or 11 elective courses (46 ECTS), the diploma thesis (19 ECTS) and one 3-month internship (that also counts as an elective class).

Overall, the Department of Chemistry at UoP has created a good infrastructure for the guidance, orientation and education/training of all students. The input/output of students is excellent since approximately 10% of the incoming students graduate within 4 years, 60% within 5 years, 90% within 6 years. All comments/feedback provided by the students regarding employment opportunities were favorable and supportive of the education/training in the Department.

PART B: COMPLIANCE WITH THE PRINCIPLES

Principle 1: Academic Unit Policy for Quality Assurance

INSTITUTIONS SHOULD APPLY A QUALITY ASSURANCE POLICY AS PART OF THEIR STRATEGIC MANAGEMENT. THIS POLICY SHOULD EXPAND AND BE AIMED (WITH THE COLLABORATION OF EXTERNAL STAKEHOLDERS) AT ALL INSTITUTION'S AREAS OF ACTIVITY, AND PARTICULARLY AT THE FULFILMENT OF QUALITY REQUIREMENTS OF UNDERGRADUATE PROGRAMMES. THIS POLICY SHOULD BE PUBLISHED AND IMPLEMENTED BY ALL STAKEHOLDERS.

The quality assurance policy of the academic unit is in line with the Institutional policy on quality, and is included in a published statement that is implemented by all stakeholders. It focuses on the achievement of special objectives related to the quality assurance of study programmes offered by the academic unit.

The quality policy statement of the academic unit includes its commitment to implement a quality policy that will promote the academic profile and orientation of the programme, its purpose and field of study; it will realize the programme's strategic goals and it will determine the means and ways for attaining them; it will implement the appropriate quality procedures, aiming at the programme's continuous improvement.

In particular, in order to carry out this policy, the academic unit commits itself to put into practice quality procedures that will demonstrate:

- a) the suitability of the structure and organization of the curriculum;*
- b) the pursuit of learning outcomes and qualifications in accordance with the European and the National Qualifications Framework for Higher Education;*
- c) the promotion of the quality and effectiveness of teaching;*
- d) the appropriateness of the qualifications of the teaching staff;*
- e) the enhancement of the quality and quantity of the research output among faculty members of the academic unit;*
- f) ways for linking teaching and research;*
- g) the level of demand for qualifications acquired by graduates, in the labour market;*
- h) the quality of support services such as the administrative services, the Library, and the student welfare office;*
- i) the conduct of an annual review and an internal audit of the quality assurance system of the undergraduate programme(s) offered, as well as the collaboration of the Internal Evaluation Group (IEG) with the Institution's Quality Assurance Unit (QAU);*

Study Programme compliance

- 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 "dotted line" linked to Central Quality organization of the institution (MODIP) chaired by Vice Rector Prof. Karamanos. Quality plan is in place since 2012-2013. Annual targets and reports are uploaded to recently (2017) built HQA Central web platform (OPESP).
- The undergraduate curriculum was disseminated by email to AP members well in advance. During the site visit the participants presented steps taken to align the study programme with

EUROBACHELOR standards. With regard to remarks and recommendation of PRINCIPLE 2, the discussions with the students, alumni and stakeholders, revealed that the study programme is adequate and effective.

- Effective efforts are made to ensure and promote the quality and value of teaching by applying adequate methods of teaching and implementing student-centred learning processes as described in departments study guide.
- The qualifications of the teaching staff are in general high and there is a notable number of highly dedicated individuals. The AP members had no opportunity to examine in detail and judge the qualifications and teaching effectiveness of the support teaching staff.
- Based on alumni, stakeholder and students interviews, the AP concluded that the level of demand for qualified graduates in the labor market is targeted toward academic careers, food industry, pharmaceutical industry at National and EU level.
- The student services office is well organized with distributed responsibilities that allow the secretariat to stay open throughout the calendar year. The library of the Department as branch of University library is well organized and serves also as a study room. The role of Academic advisor is in place but examples reported indicate that is used as problem solving agent rather than an academic mentor.
- OMEA presented to AP a plan of annual review of study programme. Reviews are initiated by students' comments and internal performance evaluation results. No detailed related information was provided to the AP members.
- Overall, the AP was convinced about the effective, thorough and continuous efforts of the Department to improve its educational activities. Study programme has undergone major revisions on 2010-2011 and 2016-2017.

Panel judgement

Please tick one of the following:

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

Panel Recommendations

Please provide your recommendations with regard to issues that need to be addressed, as appropriate.

1. The role of the academic advisor as a mentor needs to be better developed. The advisor needs to establish contacts with assigned students at set intervals and provide assistance for better integration to academic community and institute services especially during early semesters.

Principle 2: Design and Approval of Programmes

INSTITUTIONS SHOULD DEVELOP THEIR UNDERGRADUATE PROGRAMMES FOLLOWING A DEFINED WRITTEN PROCESS WHICH WILL INVOLVE THE PARTICIPANTS, INFORMATION SOURCES AND THE APPROVAL COMMITTEES FOR THE PROGRAMME. THE OBJECTIVES, THE EXPECTED LEARNING OUTCOMES, THE INTENDED PROFESSIONAL QUALIFICATIONS AND THE WAYS TO ACHIEVE THEM ARE SET OUT IN THE PROGRAMME DESIGN. THE ABOVE DETAILS AS WELL AS INFORMATION ON THE PROGRAMME'S STRUCTURE ARE PUBLISHED IN THE STUDENT GUIDE.

Academic units develop their programmes following a well-defined procedure. The academic profile and orientation of the programme, the objectives, the subject areas, the structure and organisation, the expected learning outcomes and the intended professional qualifications according to the National Qualifications Framework for Higher Education are described at this stage. The approval or revision process for programmes includes a check of compliance with the basic requirements described in the Standards, on behalf of the Institution's Quality Assurance Unit (QAU).

Furthermore, the programme design should take into consideration the following:

- *the Institutional strategy*
- *the active participation of students*
- *the experience of external stakeholders from the labour market*
- *the smooth progression of students throughout the stages of the programme*
- *the anticipated student workload according to the European Credit Transfer and Accumulation System*
- *the option to provide work experience to the students*
- *the linking of teaching and research*
- *the relevant regulatory framework and the official procedure for the approval of the programme by the Institution.*

Study Programme compliance

Please comment on the compliance with the Principle.

- The Department has responded favorably and diligently toward implementing an educational programme at the undergraduate level that took into account all earlier recommendations.
- The upgraded curriculum activity was approved in 2016 and its application started in the academic year 2016-17. The upgraded and modernized curriculum currently offers a streamlined educational programme with emphasis toward the application of modern methods of material dissemination thus complimenting the traditional lecturing approaches. In some cases, these activities include inquiry-based learning, group projects and tutoring.
- In the upgraded curriculum there was mandatory change for the 6th semester where Biochemistry 2, chemical technology and food chemistry were introduced. *The introduction of mandatory teaching of chemical technology and food chemistry is not a common practice in many very good or excellent departments.*
- The students participate in the development and enhancement of their study programmes by being an integral part of the relevant committee as well as being able to provide feedback in the corresponding class evaluation questionnaires.
- The external stakeholders of the Department show an increased interest in the quality of the Department's graduates.

- The updated structure of the curriculum compares well with those at international peer institutions.
- Undergraduate laboratory attendance is mandatory and by extension successful. This is of significant relevance when one considers the student workload in relation to the European Credit Transfer and Accumulation System.
- The Department has implemented several ways to link teaching with research including a diploma thesis (πτυχιακή εργασία) and a paid internship (πρακτική άσκηση). In addition, students are encouraged to attend seminars organized by the Department and scientific meetings inside and outside the University. *The organization and number of seminars unfortunately is not sufficient enough to be effective.*
- The diploma thesis (πτυχιακή εργασία) is obligatory for all students and has a research focus. It spans over a period of two semesters (usually in the 4th year of study) and introduces all students to research methodology and current scientific literature (19 credits). All students present their thesis results in a lecture room in the Department and, when appropriate, at scientific meetings.
- The 3-month paid internship (πρακτική άσκηση) is offered as an elective class and as such, it links students with scientists and potential future employers from the local industry. There is significant interest by the students to participate in this class (e.g., in 2018 there were about 50 internships paid by ESPA and 12 ERASMUS internships).

Panel judgement

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

Panel Recommendations

Please provide your recommendations with regard to issues that need to be addressed, as appropriate.

2. Given the success and high demand of the paid internships, the Department should secure additional funds and sponsors both from the campus and the public/private sectors. Ideally, all interested students should have an opportunity to participate in such internships.
3. There is a clear need for a better and wider integration of the external stakeholders and alumni of the Department to the departmental educational/training activities. Such integration will benefit not only the students but also the local industry. To this end, the Department could establish an "Industry-Academia Day" where members of the public/private sector can easily interact with students. In addition, the Department should attempt to assign organization duties to the external stakeholders for a satisfactory seminar program (with a minimum financial aid).
4. An increased emphasis should be placed in promoting scientific presentation and writing skills of the students. The ideal forum for this would be a Chemistry Day organized by the Department.
5. In view of the recent interest changes in chemistry and the emphasis of teaching and research in new areas such as materials, nanomaterials, chemical biology and nucleotide chemistry it would be advisable for the Department to introduce these areas in the future curriculum. These areas could be supported by the faculty of the Department of Chemistry or other Departments of the University of

Patras (e.g. Materials Science Dept., Biology Dept., Medicine Dept.) and hopefully through the hiring of new young faculty trained in these areas.

Principle 3: Student-centered Learning, Teaching and Assessment

INSTITUTIONS SHOULD ENSURE THAT THE UNDERGRADUATE PROGRAMMES ARE DELIVERED IN A WAY THAT ENCOURAGES STUDENTS TO TAKE AN ACTIVE ROLE IN CREATING THE LEARNING PROCESS. THE ASSESSMENT METHODS SHOULD REFLECT THIS APPROACH.

Student-centered learning and teaching 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-centered learning and teaching process

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

In addition :

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

Study Programme compliance

Please comment on the compliance with the Principle.

- The Department has established an Undergraduate Curriculum Committee that meets regularly and reviews/evaluates issues related to undergraduate student curricula and activities. Its goal is to regularly update the curriculum (classes, notes and laboratories) by considering both the curricula of several European Universities and the Greek environment (both public and private sector), as well as new challenges and directions of chemical, biological and material sciences. The revisions also take into consideration the local and national job market and future student employment.

- Each faculty member is assigned as the undergraduate academic advisor (ακαδημαϊκός σύμβουλος) of four-five students/year.
- The Department has adopted a student-centered approach to teaching that also takes into consideration students with special needs. When needed, a specific Teaching Assistant (TA) is assigned to a student with special needs. On this topic, AP members did not have the opportunity to evaluate in detail the departmental efforts to accommodate students with special needs.
- All information (table of contents, problems, notes, etc.) related to a course or a laboratory is uploaded on e-class and is readily available to all students in advance. The study guide is also extensive and informative. Moreover, students have access to a multimedia room where they can work with specialized chemistry software and consult electronic libraries.
- Students can find significant amount of material (books, Diploma thesis etc.) in the chemistry library that also serves as a study room.
- The students are aware that they can appeal their grade by discussing with the specific professor and ask to see their exam or retake the class. In some instances, they also have asked the academic advisor for help and guidance.

Panel judgement

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

Panel Recommendations

Please provide your recommendations with regard to issues that need to be addressed, as appropriate.

6. Infrastructure improvements are needed for accessibility of classrooms and labs for students with physical disabilities. Areas of common use, such as student restrooms, need to be renovated to become more inclusive and accessible to all students.
7. Exit interviews of graduating seniors with the Chair of the Department will further assist the Department in its educational and networking endeavors.
8. When possible, elective classes could also include visits to local companies where the students can be exposed to real-life problems. This will be beneficial to both students and companies. Thus, problem-based or experience-based learning may be incorporated as an educational method.
9. Although the concept and function of the academic advisor is clearly indicated in the Study Guide (Οδηγός Σπουδών) it is evident that the students are using this statute only when they encounter problems with their studies. The Department should advertise more actively the role and benefits of this service.
10. The Departmental chemistry seminar program should be strengthened and better advertised. Such seminars are not only educational to both students and faculty members but they also strengthen the interactions between the Department and the local/broad academia and industry. Student participation in the selection and hosting of such events will improve overall participation.

Principle 4: Student Admission, Progression, Recognition and Certification

INSTITUTIONS SHOULD DEVELOP AND APPLY PUBLISHED REGULATIONS COVERING ALL ASPECTS AND PHASES OF STUDIES (ADMISSION, PROGRESSION, RECOGNITION AND CERTIFICATION).

Institutions and academic units need to put in place both processes and tools to collect, manage and act on information regarding student progression.

Procedures concerning the award and recognition of higher education degrees, the duration of studies, rules ensuring students progression, terms and conditions for student mobility should be based on the institutional study regulations. Appropriate recognition procedures rely on institutional practice for recognition of credits among various European academic departments and Institutions, in line with the principles of the Lisbon Recognition Convention.

Graduation represents the culmination of the students' study period. Students need to receive documentation explaining the qualification gained, including achieved learning outcomes and the context, level, content and status of the studies that were pursued and successfully completed (Diploma Supplement).

Study Programme compliance

- The Department provided the AP with a thorough manual entitled “Οδηγός Σπουδών” that covers in detail all aspects of the students’ needs from the moment he/she enters the Department to graduation including details regulating the final graduation theses.
- According to above guide, required ECTS (240) are summed up in 8 semester courses. There is a balanced mix of practical (lab practices) and theoretical courses, all supported with sufficient and updated material. These are posted on Department’s site
- Studies progress is evaluated through scheduled exams. Methods used are varying among multiple choice matrixes, open question and practical tests. Alternative options exist for students that may have physical or mental handicaps.
- Cumulative courses history and evaluation data including Erasmus courses and practical courses is given in Diploma supplement, a bilingual annex of all students’ diplomas.
- Student services handle many aspects of the activities of the students ranging from admissions and extending to numerous administrative matters. The role of academic advisor exists but needs to be more proactive.
- ESPA is of great importance in promoting practical training for a significant segment of the student population. It helps extending students practical courses to industry and service enterprises National and EU-wide. ESPA funded practical courses were reported to accommodate 20% of total students during 2017-2018.
- Student mobility and academic excellence are encouraged and financially supported by ERASMUS.
- Given the heavy load of the undergraduate program, it is commendable that 10% of the incoming students graduate within 4 years, 60% within 5 years, 90% within 6 years.

Panel judgement

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

Panel Recommendations

Please provide your recommendations with regard to issues that need to be addressed, as appropriate.

- 11.** The instructors and the Department should find ways to reward academic excellence by nominating students for certain forms of recognition.

Principle 5: Teaching Staff

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

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

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

Study Programme compliance

Please comment on the compliance with the Principle.

- The Department has adopted a series of well-defined procedures as expected by state law to recruit and hire qualified teaching staff. The processes used are transparent and have been posted on the web.
- The Department has developed a strategic plan that also includes the hiring of new academic personnel.
- The AP is not aware of any apparent mechanisms for rewarding excellence in teaching.
- During the AP/personnel meeting, it became apparent that the current teaching load is significantly heavier than in the previous review period likely due to the increased number of incoming students. Thus, a very small minority (less than 10%) of the personnel asked for time off in order to further develop their career as educators.
- The role of the students in promoting quality assurance for all staff by completing the class questionnaire is important but underutilized. Specifically, about 10% of the students complete the online questionnaire making it difficult to draw significant conclusions. Consequently, the students should be encouraged to participate in such activities.

Panel judgement

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

Panel Recommendations

Please provide your recommendations with regard to issues that need to be addressed, as appropriate.

12. Several academic/staff members are projected to retire in the near future. Thus, the Department has an excellent opportunity to do strategic recruitment that, in turn, will significantly shape its activities as a prime educational and research facility. As previously stated the recruiting should consider young faculty with training/knowledge in the new areas that are presently the focus in chemistry. Areas such as solid state, materials, biological chemistry and chemical biology will be very important areas to emphasize. Since the total number of faculty will not likely increase, the shift into new areas in teaching could be supported by redesigning the content of related courses/labs, as well as through introducing related elective courses. These changes of course content could be conducted either by the current faculty members, with relevant teaching/research activities, or by hiring new young faculty trained in the new areas.

13. Mobility of both students and scientific personnel should be strongly encouraged. At the faculty level, this could be achieved by encouraging sabbaticals via paid Fellowships (e.g. ERASMUS, etc.). At the student level, this could be achieved by securing additional industry-paid internships and further promoting the current student exchange programs. On the other hand, continuation of the studies in a single Institution with the aim to secure a professional position should be strongly discouraged.

14. It is highly recommended that the Department adopt a policy of promoting and rewarding excellence in all aspects of its function. 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". On the other hand, students with excellent academic records could be rewarded by inclusions in tools such as a "Dean's List of Excellence".

15. There are distinctions that need to be made in terms of evaluating teaching and /or support and administrative staff. 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 example, administrative personnel and related professionals could be rewarded with an "Exemplary Service Award".

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 counseling services.

When allocating the available resources, the needs of all students must be taken into consideration (e.g. whether they are full-time or part-time students, employed or international students, students with disabilities) and the shift towards student-centered learning and the adoption of flexible modes of learning and teaching. Support activities and facilities may be organized in various ways, depending on the institutional context. However, the internal quality assurance ensures that all resources are appropriate, adequate, and accessible, and that students are informed about the services available to them.

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

Study Programme compliance

Please comment on the compliance with the Principle.

- The Department of Chemistry at UoP has a dedicated building for the education/training of about 170 students/year that includes one amphitheater, two main lecture rooms, five smaller lecture rooms and 12 lab rooms for undergraduate studies. There is also one seminar room, one IT- computer center, two computer rooms and one chemistry library that serves also as a study room. All lecture rooms and labs are equipped with internet and audiovisual facilities. Additional academic and educational events are accommodated in the Conference and Cultural Center located nearby.
- The computers that are available to the students appear to be old (likely ca 10 years old) and thus, often tedious to maintain. The IT personnel must be commended for the efforts to maintain and update such instrumentation.
- The students have online access to various electronic databases (Reaxys, World of Science etc.).
- Other campus facilities available to the students include a state-of-the-art University hospital, a central library and Information center, 4 museums, a well-equipped sports center and 6 schools (primary, secondary) for the families of the campus employees. In the campus life are also included various activities such as theatrical, musical, cinematographic and literature events as well as various sports programs (football, fencing, volleyball, tennis etc.).
- In addition to the above, services provided to international students include: a Residence Hall, Greek language course, introduction to Greek civilization and practice, access to ERASMUS+ network as well as free meals. These are campus-wide activities.

- All class and lab material (notes, reports, exercises, PowerPoint presentations) are uploaded on the web and are readily available to all enrolled students. The e-class and related software are available to all students and provide comprehensive syllabi and updates for all classes. In several classes and labs the education is interactive and actively engages the students in the learning process.
- Despite the insufficient funding from the Ministry of Education, the Department makes honest efforts to update laboratory instruments and provide needed consumables for all undergraduate students thus ensuring and enhancing the quality of education. To their credit, faculty members make good use of their research funds to equip the undergraduate laboratories.
- The Department offers opportunities for student exchange programmes (e.g., ERASMUS) that encourage mobility, networking and the acquiring of potentially new skills.

Panel judgement

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

Panel Recommendations

Please provide your recommendations with regard to issues that need to be addressed, as appropriate.

16. It is clear that the Department has severely limited funding for the education and training of the undergraduate students. The budget for these efforts should increase and all possible financial sources should be identified.

17. The Department should further increase the interaction between students and local/international industry by inviting its alumni and other professionals to participate in various related activities. For example, such invitations via an organized seminar program would be highly educational and mutually beneficial and may even be financially self-supported. Use of campus-wide offices such as the Career Center or specific events like Career Day should encouraged.

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

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

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

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

Study Programme compliance

Please comment on the compliance with the Principle.

- The monitoring and evaluation of the elements related to education and research, the administration services, the technical support and the international mobility, contribute to the continuous improvement of the quality in education and research, as well as in the projection of the University's achievements in the society.
- The University of Patras has recognized the importance of evaluation and has realized the first External Evaluation, as early as December 1999. Under the current legislative framework, MODIP is the central Unit of the University, which sets and disseminates the procedures of internal and external evaluation of the Academic Departments and of the entire University. MODIP organizes and coordinates the gathering of available resources, which are needed for the development of educational and research work, and proposes ideas and actions that are essential for the quality enhancement of the evaluation processes of the University.
- Throughout the University's Internal and External Evaluation processes, MODIP aims to ensure the quality of the university education and propose revisions that serve the needs of the University's community and society. Furthermore, MODIP collaborates with HQA and the state, in order to assure the quality and the improvement of the educational procedures.

- The objective of the MODIP website is the dissemination of any relevant information that concludes to the Quality Assurance of the educational and research activities of the University of Patras. Hence, it contains the Annual Reports of the Academic Departments, the four- year Internal Evaluation Reports, the External Evaluation Reports, together with important information material, as well as the instructions' manual aimed at the Teams of Internal Evaluations (OMEA) of Departments. Also, it promotes the University's achievements and thus it enhances its extroversion and its connection to society and the international environment.
- The UoP has already established and operates an information system for managing and monitoring data concerning students, teaching staff, course structure and organization which is called Πληροφοριακό Σύστημα Διασφάλισης Ποιότητας ΠΣΔΙΠ (<https://ps.modip.upatras.gr>). This information system serves to collect KPIs as instructed by HQA.
- The Chemistry Department utilizes the above information system to collect data about student progression, graduation, and employability. A comprehensive electronic library of transcripts dating to the inception of the Department is readily accessible to interested parties. The system has data security features (backup) and personal accessibility mode to protect sensitive personal data.
- As far as student and staff satisfaction surveys, the Department presents MODIP data, which are analyzed and returned to the Department annually. The analyzed data inform the continuous improvement process.
- OM.E.A. analyzes the student data and uses this information to improve the performance of both students and all teaching personnel. The unit assesses resources annually and the findings are reported by MODIP, which provides statistical data. A full record of analyzed data has been presented to the Accreditation Panel. The quality of the analyzed data meets the internationally accepted standards.
- The committee of undergraduate studies analyzes student data (e.g., course evaluations, students' performance, comments) and makes recommendations to the Department. Any changes related to the undergraduate curriculum may be voted and become formally incorporated.
- The general student population profile is available (e.g. gender balance, year of study, etc); Most students take longer than four years to complete their studies. The information gathering system has failed to capture student satisfaction, as the students do not return questionnaires. That precludes any chances for appropriate analysis. This is an area of concern but we acknowledge the difficulty to implement such actions.
- Until recently the career paths of the graduates were not systematically followed. A major effort started at the end of 2017 to create an active community of the school graduates. A useful alumni portal has been developed to promote post graduation interactions but at-present it remains underutilized. In addition, this community could contribute to the school's financial support and could constitute a network able to help new graduates enter the professional life.

Panel judgement

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

Panel Recommendations

Please provide your recommendations with regard to issues that need to be addressed, as appropriate.

- 18.** Analysis of the available information as a decision making support needs improvement.
- 19.** The limited participation of the students in the course evaluation is worrisome, since it does not facilitate drawing conclusions, recommendations and actions. This is a common problem encountered in most universities. The Department should intensify its efforts to motivate the students to participate in this very important activity, using the Students Associations to advertise participation.

Principle 8: Public Information

INSTITUTIONS SHOULD PUBLISH INFORMATION ABOUT THEIR TEACHING AND ACADEMIC ACTIVITIES WHICH IS CLEAR, ACCURATE, OBJECTIVE, UP-TO-DATE AND READILY ACCESSIBLE.

Information on Institution's activities is useful for prospective and current students, graduates, other stakeholders and the public.

Therefore, institutions and their academic units provide information about their activities, including the programmes they offer, the intended learning outcomes, the qualifications awarded, the teaching, learning and assessment procedures used, the pass rates and the learning opportunities available to their students, as well as graduate employment information.

Study Programme compliance

Please comment on the compliance with the Principle.

- The Department communicates through its web site all ongoing and current activities such as multitude of announcements, lectures, scientific events, participation and/or organization of scientific conferences, student centered dissemination activities, public outreach efforts etc.
- Study program is communicated by Department through the same communication channel in form of the Study Guide, "Οδηγός Σπουδών". This is an exemplary resource document with a wealth of information. Furthermore, the study guide is explicit as to the grading structure; pass /fail, re-examination and course re-take steps and procedures.
- The website also contains all information regarding its educational and research activities. The information is well categorized and easily accessed. The website is managed on "a need to update" basis by IT technician. Security and back up functions are in place.
- All administrative and student related public /or personal information are accessible through website. Personal keyed numbers ensure that no personal information is accessible by none authorized personnel. This includes the courses evaluation forms filled in by students. The rate of this operation is limited to 10% for evaluated Department.
- Upon graduation all students are provided by a key code and invited to access Alumni portal. Efforts to strengthen the Department-Alumni interactions are evident by the creation of new website and events but remains underutilized.
- All quality related data of Department operations are uploaded to specific portal <https://ps.modip.upatras.gr> which is then linked to Integrated National-wide Quality Information System (OPESP) set by HQA in 2017.

Panel judgement

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

Panel Recommendations

Please provide your recommendations with regard to issues that need to be addressed, as appropriate.

20. The structure that connects the alumni with the Department should be improved. An active alumni forum can serve both as aid to alternative learning practices (seminars, conferences) and as group funding mode. The local branch of the Association of Greek Chemists may also serve as a conduit and a resource for the accumulation of such vital information.

Principle 9: On-going Monitoring and Periodic Internal Review of Programmes

INSTITUTIONS SHOULD HAVE IN PLACE AN INTERNAL QUALITY ASSURANCE SYSTEM FOR THE AUDIT AND ANNUAL INTERNAL REVIEW OF THEIR PROGRAMMES, SO AS TO ACHIEVE THE OBJECTIVES SET FOR THEM, THROUGH MONITORING AND AMENDMENTS, WITH A VIEW TO CONTINUOUS IMPROVEMENT. ANY ACTIONS TAKEN IN THE ABOVE CONTEXT SHOULD BE COMMUNICATED TO ALL PARTIES CONCERNED.

Regular monitoring, review and revision of study programmes aim to maintain the level of educational provision and to create a supportive and effective learning environment for students.

The above comprise the evaluation of:

- the content of the programme in the light of the latest research in the given discipline, thus ensuring that the programme is up to date;*
- the changing needs of society*
- the students' workload, progression and completion;*
- the effectiveness of the procedures for the assessment of students*
- the students' expectations, needs and satisfaction in relation to the programme;*
- the learning environment, support services and their fitness for purpose for the programme*

Programmes are reviewed and revised regularly involving students and other stakeholders. The information collected is analyzed and the programme is adapted to ensure that it is up-to-date. Revised programme specifications are published.

Study Programme compliance

Please comment on the compliance with the Principle.

- The Department through its specific team OMEA, (see Principle 1) runs an internal evaluation program since 2011-2012.
- The Department has a well-organized scheme of committees that include: the committee on internal evaluation (OMEA), the committee on health and safety, the committee on undergraduate affairs and curriculum, the committee on graduate affairs and the ERASMUS committee.
- The Department has undergone a successful external evaluation through HQA scheme in May 2011.
- Students assessment is based on set exams frame. AP did not evaluate in details the exams procedure, but graduation rate proves successful running of curriculum. Interviews with students, alumni and stakeholders have convinced AP that curriculum is adequate since undergraduates develop necessary knowledge and skills that satisfy local and EU business and academic needs.

Panel judgement

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

Panel Recommendations

Please provide your recommendations with regard to issues that need to be addressed, as appropriate.

- 21.** Establishing an External Advisory Board with selected members from the alumni pool, the local industry, the stakeholders and the scientific community, with a formal role to Department's teaching/research activities will be beneficial both to Department and society.

Principle 10: Regular External Evaluation of Undergraduate Programmes

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

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

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

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

Study Programme compliance

Please comment on the compliance with the Principle.

- In compliance with the Greek law (3374/2005), the present accreditation process takes place for the first time in the Department of Chemistry at UoP. Nonetheless, this Department has pioneered the development of processes that allow its internal and external evaluation. In fact, it is the first academic unit that supported and instituted the ERASMUS and ECTS systems and the first Department that performed an external evaluation. Specifically, the UoP performed the first external evaluation in 1999 (CRE, Club of Rectors), while in 2005-2006 the UoP enhanced the evaluation processes and conducted the first pilot studies using its Chemistry Department as a model system. UoP underwent an external evaluation in 2015.
- The Department's internal evaluation committee (OMEA) has a continuous and productive collaboration with MODIP, the quality-assurance committee of UoP. All members of staff contributed to the review processes and evidence was provided that they appreciate the importance of both professional body accreditation and HQA peer review.
- The Panel drew evidence from representatives of all stakeholders (students, faculty, alumni and employers). The follow-up actions recommended by the 2012 external evaluation committee have been implemented within the constraints of the Department. The stakeholders have expressed their willingness to contribute to the programme in various ways thus enhancing student education and career orientation.

Panel judgement

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

Panel Recommendations

Please provide your recommendations with regard to issues that need to be addressed, as appropriate.

NONE

PART C: CONCLUSIONS

I. Features of Good Practice

Please state aspects of good practice identified, with regard to the Study Programme.

The undergraduate programme at the Department of Chemistry, University of Patras approaches full compliance. The goals and functions of the Chemistry Department are well documented and its strategic plan is updated and reflects the current societal needs. The infrastructure of the Department (building, facilities, library etc.) is appropriate for its educational and research goals. All class/lab-related material (e.g., class goals, notes, syllabi, grading requirements etc.) is readily available to all students. Moreover, the teaching approaches have been modernized to encourage student-centered learning and promote student-instructor interactions. All mechanisms to support student education and welfare (e.g., chemistry secretariat, students advising, chemistry library, alumni association) have been established and are functional. The Department has established a committee that deals with all aspects of undergraduate affairs and curriculum. Moreover, its internal evaluation committee (OMEA) is functional and collaborates well with MODIP and HQA. Along these lines, both the Department and UoP are commended for being among the first in Greece in establishing mechanisms for evaluation of their educational and research activities. All Department personnel should be praised for their efforts, despite the class overload, to educate/train the students and maintain an excellent ratio of students input/output. In addition, the service of the Department toward the local and broader society (e.g., Schools-University interaction events, co-participation in the International Day of Chemistry) is significant and impactful.

II. Areas of Weakness

Please state weak areas identified, with regard to the Study Programme.

Certain weaknesses have been identified that once addressed will further elevate the current undergraduate programme. These are:

- (a) The Chemistry Department has made a strategic decision to offer classes/labs toward food sciences and technology. Although, emphasis on these topics is justified by the needs of the local industry, the educational material adds to the heavy load of classes/labs that is needed for graduation. Moreover, such topics do not align well with those of other international chemistry departments where recent emphasis has been placed in materials science and biological chemistry. The projected changes on academic personnel, due to obligatory retirements and expected hiring, give the Department an opportunity to reshape and modernize its academic and research activities (see recommendations #5, #12).
- (b) Although the Department actively participates in various national and international meetings, as well as scientific collaborations it does not maintain an active departmental seminars program. Lack of funding earmarked for such events and/or lack of student participation may account for this weakness. Involvement of the stakeholders, alumni and local industry could overcome any budgetary constraints while participation of students to the selection/hosting of speakers could increase the appeal. Such seminars are beneficial to students, instructors and visiting scientists (see recommendations #2, #10).

- (c) The interactions between the Department and its alumni as well as local professionals should be strengthened and further expanded. This will be beneficial to all participants and will have a significant impact in the undergraduate programme (see recommendations #3, #7, #21).
- (d) Funding of the undergraduate programme is not commensurate with the number of students the Department teaches, especially regarding laboratory instrumentations and consumables. The Department is doing a significant job in allocating its limited resources for the training of the students. This training will be substantially improved by increasing the State-allocated budget for the educational programme (see recommendation #16).
- (e) The infrastructure and buildings of the Department are out-dated and need to be upgraded. Financial support should be sought to renovate the various buildings/facilities and make them more accessible to students of special needs. Also, the computer and equipment facilities should be upgraded (see recommendations #2, #6).
- (f) The student participation to the online class evaluation is limited and in certain cases insufficient to draw conclusions and recommend revisions to the curriculum. The Department should increase its efforts to inform the students not only on the use of this questionnaire but on the benefit of such data for the modernization and revision of the education. Efforts should be made to streamline the evaluation process and advertise the benefits of student participation (see recommendation #19).
- (g) The role of academic advising for the education of a student should be further strengthened and advertised by the Department. Although the Department has assigned academic advisors to all students, it is apparent that many among them do not take advantage of this service and do not benefit from it (see recommendation #1).
- (h) Academic excellence as well as exemplary professional service could be better recognized by the Department (see recommendation #14).
- (i) Students exchange programs as well as sabbatical activities should be encouraged as they enhance educational, professional and cultural development for both students and faculty members (recommendation #13).

As indicated above, the listed weaknesses are found in most if not all International undergraduate programmes. As such, they do not affect accreditation nor compliance with the International standards.

III. Recommendations for Follow-up Actions

Please make any specific recommendations for development.

Note: *The recommendations below are a repetition of the ones suggested in each principle. Thus, their numbering does not reflect relative importance.*

1. The role of the academic advisor as a mentor needs to be better developed. The advisor needs to establish contacts with assigned students at set intervals and provide assistance for better integration to academic community and institute services especially during early semesters.
2. Given the success and high demand of the paid internships, the Department should secure additional funds and sponsors both from the campus and the public/private sectors. Ideally, all interested students should have an opportunity to participate in such internships.
3. There is a clear need for a better and wider integration of the external stakeholders and alumni of the Department to the departmental educational/training activities. Such integration will benefit not only the students but also the local industry. To this end, the Department could establish an

“Industry-Academia Day” where members of the public/private sector can easily interact with students. Such events could be organized using the IQ Patras facilities and infrastructure. In addition, the Department should attempt to assign organization duties to the external stakeholders for a satisfactory seminar program (with a minimum financial aid).

4. An increased emphasis should be placed in promoting scientific presentation and writing skills of the students. The ideal forum for this would be a Chemistry Day organized by the Department.
5. In view of the recent interest changes in chemistry and the emphasis of teaching and research in new areas such as materials, nanomaterials, chemical biology and nucleotide chemistry it would be advisable for the Department to introduce these areas in the future curriculum. These areas could be supported by the faculty of the Department of Chemistry or other Departments of the University of Patras (e.g. Materials Science Dept., Biology Dept., Medicine Dept.) and hopefully through the hiring of new young faculty trained in these areas.
6. Infrastructure improvements are needed for accessibility of classrooms and labs for students with physical disabilities. Areas of common use, such as student restrooms, need to be renovated to become more inclusive and accessible to all students including those with special needs.
7. Exit interviews of graduating seniors with the Chair of the Department will further assist the Department in its educational and networking endeavors.
8. When possible, elective classes could also include visits to local companies where the students can be exposed to real-life problems. This will be beneficial to both students and companies. Thus, problem-based or experience-based learning may be incorporated as an educational method.
9. Although the concept and function of the academic advisor is clearly indicated in the Study Guide (Οδηγός Σπουδών) it is evident that the students are using this statute only when they encounter problems with their studies. The Department should advertise more actively the role and benefits of this service.
10. The departmental chemistry seminar program should be strengthened and better advertised. Such seminars are not only educational to both students and faculty members but they also strengthen the interactions between the Department and the local/broad academia and industry. Student involvement in the selection and hosting of such events will improve overall participation.
11. The instructors and the Department should find ways to reward academic excellence by nominating students for certain forms of recognition.
12. Several academic/staff members are projected to retire in the near future. Thus, the Department has an excellent opportunity to do strategic recruitment that, in turn, will significantly shape its activities as a prime educational and research facility. As previously stated the recruiting should consider young faculty with training/knowledge in the new areas that are presently the focus in chemistry. Areas such as solid state, materials, biological chemistry and chemical biology will be very important areas to emphasize. Since the total number of faculty will not likely increase, the shift into new areas in teaching could be supported by redesigning the content of related courses/labs, as well as through introducing related elective courses. These changes of course content could be conducted either by the current faculty members, with relevant teaching/research activities, or by hiring new young faculty trained in the new areas.
13. Mobility of both students and scientific personnel should be strongly encouraged. At the faculty level, this could be achieved by encouraging sabbaticals via paid Fellowships (e.g. ERASMUS). However, the committee recognizes that for faculty, such activities may increase the course load for the remaining personnel. At the student level, this could be achieved by securing additional industry-paid internships and further promoting the current student exchange programs. On the other hand,

continuation of studies in a single Institution with the aim to secure a professional position should be strongly discouraged.

14. It is highly recommended that the Department adopt a policy of promoting and rewarding excellence in all aspects of its function. 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”. On the other hand, students with excellent academic records could be rewarded by inclusion in tools such as a “Dean’s List of Excellence”.

15. There are distinctions that need to be made in terms of evaluating teaching and /or support and administrative staff. 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 example, administrative personnel and related professionals could be rewarded with an “Exemplary Service Award”.

16. It is clear that the Department has severely limited funding for the education and training of its undergraduate students. The budget for these efforts should increase and all possible financial sources should be identified.

17. The Department should further increase the interaction between students and local/international industry by inviting its alumni and other professionals to participate in various related activities. For example, such invitations via an organized seminar program would be highly educational and mutually beneficial and may even be financially self-supported. Use of campus-wide offices such as the Career Center or specific events like Career Day should encouraged.

18. Analysis of the available information, as a decision-making support, needs improvement.

19. The limited participation of the students in the course evaluation is worrisome, since it does not facilitate drawing conclusions, recommendations and actions. This is a common problem encountered in most universities. The Department should intensify its efforts to motivate the students to participate in this very important activity, using the Students Associations to advertise participation.

20. The structure that connects the alumni with the Department should be improved. An active alumni forum can serve both as aid to alternative learning practices (seminars, conferences) and as group funding mode. The local branch of the Association of Greek Chemists may also serve as a conduit and a resource for the accumulation of such vital information.

21. Establishing an External Advisory Board with selected members from the alumni pool, the local industry, the stakeholders and the scientific community, with a formal role to Department’s teaching/research activities will be beneficial both to the Department and society.

IV. Summary & Overall Assessment

The Principles where full compliance has been achieved are:

Principles 1,4,7,8,9,10

The Principles where substantial compliance has been achieved are:

Principles 2,3,5,6

The Principles where partial compliance has been achieved are:

NONE

The Principles where failure of compliance was identified are:

NONE

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

The members of the Accreditation Panel for the Undergraduate Programme Chemistry of the University of Patras

Name and Surname

Signature

Prof. Emeritus Dimitri Coucouvanis (Chair), University of Michigan,
Michigan, USA

Dr Michail Chalaris, Member of the Association of Greek Chemists, Athens,
Greece

Mr Rodios Gamvros, Hellenic Food Industry Federation, Athens, Greece

Prof. Emmanuel Theodorakis, University of California, San Diego, USA

APPENDIX 1

Timetable of the Accreditation Panel On-site Visit

Undergraduate Programme: Chemistry - University of Patras

24/02/2019 – 02/03/2019

Time	What & Who?	Why?
Monday, 25/02/2019, Athens - Patras		
16:30 - 17:00	Meeting with the Vice Rector/President of MODIP & the Head of the Department AP Vice Rector / President of MODIP: <ul style="list-style-type: none"> • Professor Nikos Karamanos Head of the Department: <ul style="list-style-type: none"> • Professor Georgios Bokias 	Welcome meeting - Short overview of the Undergraduate Programme (history, academic profile) current status, strengths and possible areas of concern
17:00 - 19:00	Meeting with OMEA & MODIP representatives AP MODIP representatives: <ul style="list-style-type: none"> • Professor Nikos Karamanos • Professor Athanasios Karalis • Professor Ioannis Giannikos OMEA representatives: <ul style="list-style-type: none"> • Professor Christos Kordulis (coordinator) • Professor Georgios Bokias • Professor Theodore Christopoulos • Professor Dionissios Papaioannou • Professor Spyridon Perlepes 	Discuss the degree of compliance of the Undergraduate Programme to the Standards for Quality Accreditation - Review of students assignments, thesis, exam papers & examination material
19:00 - 19:30	Debriefing meeting AP members only	Reflect on impressions; prepare for the second day of visit
19:30	Transport back to the hotel	
Tuesday, 26/02/2019, Patras - Athens		
09:00 - 09:45	Meeting with teaching staff members AP Teaching staff members: <ul style="list-style-type: none"> • Prof. Joannis Kallitsis • Prof. George Maroulis • Assoc. Prof. Constantinos Athanassopoulos • Assoc. Prof. Hrissi Karapanagioti • Assoc. Prof. Helen Papaefthymiou • Assoc. Prof. Achilleas Theocharis • Assoc. Prof. Theodore Tselios • Assistant Prof. Chrysovalado Deimede • Assistant Prof. Vassilis Tangoulis • Dr Efstathia Koulouri, Special Teaching Staff 	Discuss professional development opportunities, mobility, workload, evaluation by students; competence and adequacy of the teaching staff to ensure learning outcomes; link between teaching and research; teaching staff's involvement in applied research, projects and research activities directly related to the programme; possible areas of weakness
10:00 - 10:45	Meeting with students	Students satisfaction from their

	AP & students	study experience and Department/Institution facilities; student input in quality assurance; priority issues concerning student life and welfare
11:00 - 12:00	Visiting classrooms, lecture halls, libraries, other facilities (computer rooms, libraries, etc.) AP Administrative staff members: <ul style="list-style-type: none"> • Registrat Elisavet Bouzamanaki Teaching staff members: <ul style="list-style-type: none"> • Professor Georgios Bokias, Head of Dept. • Professor Theodore Tsegenidis 	Evaluate facilities and learning resources to ascertain that the learning materials, equipment and facilities are adequate to ensure a successful provision of the programme
12:00 - 12:30	Meeting with graduates AP Graduates: <ul style="list-style-type: none"> • Giannis Papaefstathiou, Associate Professor, Department of Chemistry, National and Kapodistrian University of Athens • Yiannis Sarigiannis, Assistant Professor, University of Nicosia • Christina Morfopoulou, BWT Pharma & Biotech GmbH • Giannis Thivaos, ArC Laboratories (Not attended) • Chrysostomi Gialleli, Postdoctoral Research Fellow, Lund University • Nikos Afratis, Postdoctoral Research Fellow, Weizmann Institute of Science. 	Discuss their experience of studying at the Department and their career path
12:30 - 13:00	Meeting with employers, social partners AP Employers/ Social partners: <ul style="list-style-type: none"> • Ioannis Mylonas, ATHENIAN BREWERY • Kostas Alexiou, CHIPITA (Not attended) • Andreas Roussidis, Amgen • George Voyiatzis, Research Director, Chair of the Scientific Council, Institute of Chemical Engineering Sciences, FORTH • Despina Tataraki, Association of Greek Chemists • Petros Sotiriou, Hellenic Food Authority • Evgenia Drakopoulou, General Chemical State Laboratory 	Discuss relations of the Department with external stakeholders from the private and the public sector
13:00 - 14:00	Lunch break AP members only	Reflect upon impressions of meetings and complete information where necessary
14:00 - 14:30	Debriefing meeting AP members only	Reflect on impressions; prepare for the second day of visit
14:30 - 15:00	Meeting with OMEA & MODIP representatives AP MODIP representatives:	Discuss on several points/findings which need further clarification

	<ul style="list-style-type: none"> • Professor Nikos Karamanos • Professor Athanasios Karalis • Professor Ioannis Giannikos <p>OMEA representatives:</p> <ul style="list-style-type: none"> • Professor Christos Kordulis (coordinator) • Professor Georgios Bokias • Professor Theodore Christopoulos • Professor Dionissios Papaioannou • Professor Spyridon Perlepes 	
15:00 - 15:15	<p>Closure meeting with the Vice-Rector/President of MODIP, the Head of the Department, OMEA & MODIP representatives</p> <p>Vice Rector / President of MODIP:</p> <ul style="list-style-type: none"> • Professor Nikos Karamanos <p>Head of the Department:</p> <ul style="list-style-type: none"> • Professor Georgios Bokias <p>MODIP representatives:</p> <ul style="list-style-type: none"> • Professor Athanasios Karalis • Professor Ioannis Giannikos <p>OMEA representatives:</p> <ul style="list-style-type: none"> • Professor Christos Kordulis (coordinator) • Professor Georgios Bokias • Professor Theodore Christopoulos • Professor Dionissios Papaioannou • Professor Spyridon Perlepes 	Informal presentation of the AP key findings
16:30	Departure of AP members – Travel to Athens	