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ΤΗΣ ΠΟΙΟΤΗΤΑΣ ΣΤΗΝ ΑΝΩΤΑΤΗ ΕΚΠΑΙΔΕΥΣΗ

HELLENIC REPUBLIC
HQA
HELLENIC QUALITY ASSURANCE
AND ACCREDITATION AGENCY

Accreditation Report
for the Undergraduate Study Programme of:
Materials Science
Institution: University of Patras
Date: 25/05/2019

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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 **Materials Science** 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 **Materials Science** of the **University of Patras** comprised the following five (5) members, drawn from the HQA Register, in accordance with the Law 4009/2011:

1. **Prof Pelagia-Irene (Perena) Gouma (Chair),**
The Ohio State University, USA
2. **Prof Stavros Avramidis,**
University of British Columbia, Canada
3. **Prof George Haritos,**
The University of Akron, USA
4. **Prof Vassilis Pontikis,**
Saclay Institute of Matter and Radiation, France
5. **Prof. George Stylios,**
Heriot-Watt University, United Kingdom

II. Review Procedure and Documentation

The Accreditation Panel (AP) convened on Monday May 20th, 2019 at the HQA headquarters in Athens and was briefed by the HQA Director and staff on the Quality Assurance (QA) accreditation mission, standards, and guidelines. During the briefing, the panel received, well in advance, documentation regarding the policies of the accreditation process as well as a template for preparing the Accreditation Report for the Undergraduate Program to be assessed, which in this case is the Materials Science (MS) Program in the Materials Science Department of the University of Patras (UoP).

Prior to this briefing, the AP panel had received from HQA via email copies of documents submitted by the MS Department of the UoP to facilitate the accreditation process, including the Proposal for Accreditation of the Internal Quality Assurance System for the MS Department of the UoP (which was submitted to HQA on 01/02/2019); The Study Guide 2018-2019; a copy of the departmental External Evaluation Report from 2013; and the response to that report by the department, among others.

Subsequently, the AP briefly met and decided on the strategy and approach to be followed during the site visit. On the same day, the AP traveled to Patras. Upon arrival, the AP met with the University Vice-Rector, the Department Head, the Quality Assurance Unit (MODIP), and with OMEA members. The Vice-Rector also serves as the MODIP President. The AP was briefed on the history and academic profile of the University of Patras, its current status, its strengths and possible areas of concern. The above were supported by presentations given by the Department, copies of which were handed to the AP.

During the AP's meeting with the Internal Evaluation Group (OMEA) and MODIP, the compliance of the Materials Science Undergraduate Program to the standards for quality accreditation set by HQA was discussed, along with a review of the student assignments, theses, reports and exams, etc. Subsequently, the AP held an internal debriefing to reflect on first impressions and to prepare for the second day of the visit.

On Tuesday May 21st, the AP requested to visit a classroom where a course of the Department of Materials Science was being taught and it was able to observe a teaching staff (faculty) teach an elective course and subsequently was able to chat with several undergraduate students of the program during a break. Next, the AP visited a renovated amphitheater and a classroom used by the Department for teaching activities.

Following, the AP met with teaching staff members of the Department of Materials Science discussing professional development opportunities, mobility, faculty workload, student

evaluations, connections between teaching and research, teaching staff involvement in applied research, projects and related activities to the program. After that, the AP met with undergraduate students selected by the Department to discuss their studies.

The AP, before lunch, had the opportunity to talk with a departmental representative in the Student Union and received information of how students interact with faculty in the department and across the University. We also discussed student pressing issues. At lunchtime, the AP discussed matters regarding the MS program, based on the information available thus far.

The AP met with alumni of the program studying or working in Greece and abroad and some of their employers via skype video conference and met with external stakeholders (business leaders related to materials industries) face-to-face. The day concluded with the AP further discussing its impressions of the second-day meetings.

On Wednesday May 22nd, the AP visited the MS Department classrooms, teaching and research laboratories, and other facilities. During these visits, the AP discussed with students, faculty and staff what is required for the successful operation of the MS program. The AP had a short internal debriefing discussing site-visit related issues. A final briefing was held among the AP, Vice-Rector, the Head of the Department, the OMEA, and the MODIP. Soon after, the AP left Patras travelling to Athens and initiated drafting of the accreditation report.

On May 25th 2019 the AP completed the draft Accreditation Report.

III. Study Programme Profile

The Department of Materials Science at the UoP was established in 1999 by Presidential Decree # 206 which was published in the Government Gazette (ΦΕΚ 179 της 9/9/1999). The expected duration of studies for the MS undergraduate program is 4 years (8 semesters). Every year approximately 140 students are admitted and from these approximately 130 are enrolled and about 90 continue their studies in the second year (based on lab registration records). There were 72 students who graduated from the program in 2016-2017 and 57 in 2017-2018, with the majority of them being between 1 and 3 years past the normal duration of the program.

As of 2019, there are 16 members of the teaching staff: 7 Full Professors, 4 Associate Professors, 4 Assistant Professors, 1 Lecturer, 2 members of Teaching Staff (EDIP) and 2 Technical Personnel (ETEP), 5 Administrative Assistants, and 1 member of Technical Staff. At present, there are 1186 active undergraduate students and 21 Masters and 36 PhD students. The department should continue pursuing recruiting of two faculty members in the biomaterials area. There is an urgent need for additional undergraduate teaching space, including laboratory facilities and instrumentation.

PART B: COMPLIANCE WITH THE PRINCIPLES

Principle 1: Academic Unit Policy for Quality Assurance

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

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

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

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

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

Study Programme compliance

A suitable Quality Assurance policy has been established by the University of Patras that clearly defines review processes and Key Performance Indicators (KPIs) that are monitored by a standing committee (MODIP). In order to implement recommendations from the last departmental review and establish an improvement procedure, a MS departmental standing committee (OMEA) has been formed. OMEA is linked to MODIP for perpetual exchange of information that aims to the improvement of the undergraduate program. All related information is then communicated to the MS faculty, and students via printed documents, department meeting presentations and email. Faculty, support staff and student responsibilities are well defined. Goals articulated by the internal

and recommendations proposed by the external evaluations are analyzed and roadmaps are shaped. These are duly monitored, updated, and communicated to faculty, staff and administration.

Panel judgement

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

Panel Recommendations

The AP commends the currently established structure of curriculum quality information gathering, monitoring and dissemination. However, the AP recommends more effort in undergraduate curriculum refinement with the participation of all pertinent stakeholders, namely, students, alumni (active in advanced education/research and industry) and private/public employers.

It is recommended that, in addition to the existing internal evaluation procedures, the department establishes a Program Advisory Panel (PAP) comprised of the aforementioned stakeholders that meets (as a minimum) once-a-year together with the Department Chair and selected faculty to review the program. The outcomes should be discussed in upcoming departmental meetings and earnestly considered as motivation for curriculum improvement.

Principle 2: Design and Approval of Programmes

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

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

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

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

Study Programme compliance

The Program is comparable in both quality and content to their counterparts in European countries and in the US. Factors taken under consideration include the balance of basic training and optional modules, and the homogenization of the initial background of the students which is originally diverse.

The curriculum is appropriate in the context of underlying the specificity of materials science versus neighboring disciplines, i.e. chemical and mechanical engineering. Furthermore, it encompasses lectures and training on nowadays hot subjects, such as biomaterials, opto-electronics, and nanoscience.

The structure of the study program is rational as it follows a logical thematic sequence. However, the balance between laboratories (practice) and lecturing needs improvement to augment the former. For instance, offering additional field trips would be advantageous.

Criteria that have been used for periodic revisions of the program include rapid consideration of emerging research subjects and applications, social needs, and the crucially important professional insertion of the student body nationally and internationally.

The department's general assembly re-examines every year the program and considers/ approves its motivated evolution. Consultation with stakeholders, external experts, students' and graduates' contributions are mostly informal at this time. This is an important point that requires timely resolution. More specifically, an advisory committee should be created, including representatives from the above listed categories, at the departmental level.

The Student Guide appears to be informative (e.g., the undergraduate "roadmap for newly admitted students"). However, periodic reminders -especially directed to first and second year students- will help them adapt smoothly to the University environment and to the departments through the adoption of good practices.

Panel judgement

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

Panel Recommendations

It is recommended that the department promotes frequent, general and specialized seminars that will be widely advertised by experts in the field including alumni at the leading edge of materials science discipline. All faculty, staff, and students of the Department and related academic disciplines and industry should be invited. This activity should promote student interest in specific research subjects and allow the department members to inform colleagues and students about their specific research activities. Such activities improve the cohesion of the department and broaden the horizons of students. This may provide them with a wider choice of topics for their diploma work.

Principle 3: Student- centred Learning, Teaching and Assessment

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

Student-centred learning and teaching plays an important role in stimulating students' motivation, self-reflection and engagement in the learning process. The above entail continuous consideration of the programme's delivery and the assessment of the related outcomes.

The student-centred learning and teaching process

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

In addition :

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

Study Programme compliance

The AP found clear evidence of the availability and deployment of a variety of modes of delivery of the material for each course – both in Lectures and Laboratory Sessions – that offers students the flexibility to choose the learning path that works best for each of them. When asked about the quality of instruction and the commitment of the faculty and staff to their learning, the interviewed students' responses were invariably very positive. Students have the opportunity to assess the effectiveness of teaching via surveys, and they also commented that informal, direct communications with teaching faculty and staff were carefully considered and often led to arrangements for additional instruction hours (tutorials) to clarify areas of the material in

which students are confused. The students are aware of the attendance and assessment criteria for each Lecture and Laboratory class. Also, a formal process for student appeals is well defined and available.

Overall, the Panel found that the undergraduate program in the Department of Materials Science is substantially student-centered and promotes mutual respect between the students and the faculty and staff.

Panel judgement

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

Panel Recommendations

Define minors (areas of concentration) and list the required courses that satisfy each minor.

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

In general, the AP is satisfied that the students are supported throughout their journey from admission to graduation by the Department's faculty and staff. Examples of this support include the carefully prepared and detailed "Roadmap for Newly-Admitted Students, 2018-2019", copies of which were made available to the Panel, and the fact that student mobility is encouraged and practiced using all available programs, such as Erasmus and practical training; both of these programs are viewed as very valuable and contribute to the overall education and development of the undergraduate students.

A Thesis Handbook is available and the Panel was highly impressed with the quality and depth/breadth of the graduating students' Diploma Theses. That, of course, reflects most positively on the faculty advisors who guide and assist students throughout the process, from selecting an appropriate topic through the completion and presentation of each topic. A significant number of these theses are published in archival journals further highlighting their high quality.

One area which requires attention and improvement is that of student advising. Several students stated to the Panel that they were unaware that an advisor had been assigned to them, and no record of meetings between students and advisors seems to exist.

The Panel also believes that certain adjustments are necessary to help this very strong Program become even stronger. Similar conclusions to those outlined next were reached and offered as recommendations by the previous evaluators of this Program in 2013 but, for a variety of reasons (some of which are beyond the control of the Department and/or the University of Patras) have not been implemented. Broadly, they deal with the preparation of admitted

students, compliance with designated pre-requisite courses, and additional graded work – such as midterm/progress examinations and homework assignments – to stimulate further semester-long engagement of students and deeper learning.

Panel judgement

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

Panel Recommendations

The Panel learned that admitted students' preparation is often lacking, even in fundamental areas such as Mathematics, Physics, and/or Chemistry. Since the required University-level courses assume that entering students possess such basic knowledge in these topics, in such cases a serious problem exists. Until this issue is addressed and corrected at the appropriate levels, the Panel recommends that mandatory preliminary courses (not counted toward fulfilling graduation credit hour requirements) are created and made compulsory for these under-prepared students.

Compliance with the designated pre-requisite courses must be enforced. This will ensure that students have the necessary background so that they may succeed in the subsequent course(s).

Additional graded work should be established for all Lecture courses, such as homework assignments, and progress and/or mid-term examinations. This is necessary for encouraging students to engage early in each term in learning the required material in each course and remain engaged throughout the Semester so that they succeed in passing their courses.

Regarding student advising, students should be required to meet with their advisors at least once each semester and documentation of the conversation and recommendations made by the advisor and agreed upon by the student should be retained, as a minimum until the student receives her/his undergraduate diploma.

Principle 5: Teaching Staff

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

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

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

Study Programme Compliance

The AP found that the MS Department is active in teaching courses and lab modules and that it participates in research, conferences and exchange programs, both domestic and international, under the umbrella of the UoP and EU.

The MS Department prides itself on the quality of the teaching staff. All its members have qualifications of comparable standing with that of other universities at home and abroad. Teaching staff are being evaluated by students, regularly, through on-line questionnaires for their competence and for aspects related with the subject being taught, the curriculum and its delivery. The department is encouraged to find ways of increasing the participation of students in these questionnaires and to establish a mechanism of managing its outcomes beyond publication over the internet of these surveys.

In laboratory practicals, the department needs to provide more working space so that the teaching and learning processes become more effective. At present, the space is inadequate and the students are cramped, questioning the effectiveness of practical lab work. If additional space becomes available, staff time will be optimized and the provision of lab-work not being in-synch with lectures will be eliminated.

Individual discussions with staff during our visit found that some incorporate into their teaching new research findings. The department should encourage all to do this actively, for example through curriculum review.

The department functions well overall and appears to be good cooperation and working relations between staff and students. However, a systematic approach to staff accountability, performance, development and promotion is highly desirable. There are a number of aspects which are managed on an *ad hoc* basis, for example AP was informed of certain opportunities

such as attending conferences, training in the use of specialized instruments, mobility (universities and companies) and the culture of collegiality. Faculty mentoring is also done on an informal basis.

The opportunity to engage more women for example by invitation to give lectures and perhaps inviting women to apply to new faculty recruitment opportunities should be encouraged to combat the apparent gender-balance problem.

Panel judgement

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

Panel Recommendations

The department is encouraged to find ways of increasing the participation of students in the questionnaires and to establish a mechanism of managing its outcome beyond publishing the scores.

The department should continue encouraging its faculty to actively incorporate research results into their teaching.

Strategic partnerships with industry are particularly useful for curriculum development as well as for teaching. Establishing an industrial advisory board (IAB) is recommended.

Faculty mentoring and gender-balance achievement are being recommended.

Principle 6: Learning Resources and Student Support

INSTITUTIONS SHOULD HAVE ADEQUATE FUNDING TO COVER TEACHING AND LEARNING NEEDS. THEY SHOULD –ON THE ONE HAND- PROVIDE SATISFACTORY INFRASTRUCTURE AND SERVICES FOR LEARNING AND STUDENT SUPPORT AND–ON THE OTHER HAND- FACILITATE DIRECT ACCESS TO THEM BY ESTABLISHING INTERNAL RULES TO THIS END (E.G. LECTURE ROOMS, LABORATORIES, LIBRARIES, NETWORKS, BOARDING, CAREER AND SOCIAL POLICY SERVICES ETC.).

Institutions and their academic units must have sufficient funding and means to support learning and academic activity in general, so that they can offer to students the best possible level of studies. The above means could include facilities such as libraries, study rooms, educational and scientific equipment, information and communications services, support or counselling services.

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

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

Study Programme compliance

AP understands that the department manages funding well such as to cover its basic teaching and learning needs.

As far as buildings and infrastructure are concerned, there is a conspicuous need for maintenance of the existing buildings or full replacement. Existing classrooms, labs, main buildings are at some distance apart and students/faculty have sometimes a considerable distance to move from one place to another. The AP was informed by the Vice-Rector of the UoP that a new building has been approved to house the department.

One important aspect for the department is the use of laboratories and modern instrumentation in materials science. To that effect, the department is in need of establishing XRD and XDS facilities for enhancing laboratory-based teaching and research coupled with the laboratory space needs already mentioned.

It is evident that the school has established and is using advanced electronic platforms for registration, teaching, scoring, announcements and on-line journals library services. These services are supported by dedicated staff for teaching and administrative purposes.

Procurement of all departmental needs including consumables and especially for chemicals and other materials and supplies for laboratories can pose serious delays if their usage is not anticipated a year in advance which is counterproductive.

During our visit and by talking with students we found that there is a good rapport with the departmental staff who are very helpful, so aspects of counselling, welfare, placements and

careers are being covered adequately. The University offers good sports, cultural and boarding facilities to its students.

External speakers need to be encouraged from academe and industry and a budget to achieve this should be set aside. This will enable teaching to contextualise the numerous end uses of modern materials.

The department should establish a policy of external funding generation where allowed, so that it will secure its future development beyond the hindrance of state funding. The more independent funding is raised, the higher the autonomy of the department to develop, of the staff to advance, and of its students to become better, aiming towards excellence.

Panel judgement

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

Panel Recommendations

It is recommended that departmental buildings need maintenance. The problem with existing classrooms, labs and main buildings being far from each-other needs to also be addressed.

The Department needs to add additional space to existing laboratories, and to establish XRD and XDS facilities for enhancing laboratory-based teaching and research.

Discretionary Budget allocation by the Department Chair is highly recommended for the procurement of consumables (chemicals, supplies, etc.) in an as-needed basis.

The AP recommends establishing a dedicated undergraduate student lounge that will promote cohesion among peers, security of belongings, and privacy.

The department is encouraged to invite external speakers from academia and industry and a budget to achieve this should be set aside. Continuing seeking external funding will facilitate reaching the targets above.

Principle 7: Information Management

INSTITUTIONS BEAR FULL RESPONSIBILITY FOR COLLECTING, ANALYSING AND USING INFORMATION, AIMED AT THE EFFICIENT MANAGEMENT OF UNDERGRADUATE PROGRAMMES OF STUDY AND RELATED ACTIVITIES, IN AN INTEGRATED, EFFECTIVE AND EASILY ACCESSIBLE WAY.

Institutions are expected to establish and operate an information system for the management and monitoring of data concerning students, teaching staff, course structure and organisation, teaching and provision of services to students as well as to the academic community.

Reliable data is essential for accurate information and for decision making, as well as for identifying areas of smooth operation and areas for improvement. Effective procedures for collecting and analysing information on study programmes and other activities feed data into the internal system of quality assurance.

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

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

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

Study Programme compliance

There is a database and a printed document (OMEA report) that contains student information, teaching evaluations and student progression. There is limited info regarding alumni career paths and that is mainly based on individual contacts between faculty members and graduates. This database is recently digitized and communicated to all faculty members and administration in the form of graphs and trends as per the internal evaluation report. The information can also be found at the department's webpage and printed documents are for public view in the department's library/study room. Data broadcasting is compliant to the EU directive for sensitive information reporting that are publicly accessible. It is unclear how this information influences strategy development and curriculum improvement apart from the sole purpose of providing a quantitative picture of current and past state of affairs.

Panel judgement

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

Panel Recommendations

The AP commends the department for current efforts in gathering and disseminating information regarding current and past undergraduate students. The AP believes, within reasonable limits, that there is space for improvement in creating a database of past graduates and their career paths so that they can be utilized to promote the department and support/inspire current students.

Principle 8: Public Information

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

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

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

Study Programme compliance

The AP found that the MS Department publishes information regarding course structure, attendance, assessment degree requirements, teaching staff information and CV's. All information seems to be updated regularly and on-time and it is clear and easily accessible.

Panel judgement

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

Panel Recommendations

The Department is encouraged to keep the good work in publishing information on its academic activities and to try to do it as early as possible to allow students and staff time for planning and execution.

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

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

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

The above comprise the evaluation of:

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

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

Study Programme compliance

The MS Department has an internal process of assessing the teaching performance of its faculty through electronic questionnaires that the students taking the class can fill out at their leisure before taking the final exam of the respective course. The latter process has the advantage of making the assessment readily accessible by everyone involved but the disadvantage is that a small number of students responds typically. The other problem is the way that the student union deals with problems involving teaching, such as the issue with the pre-requisites not being mandatory. The department also has a mechanism for dealing with updating the curriculum.

Panel judgement

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

Panel Recommendations

N/A

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 administrating the programme accreditation process which is realised 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

The MS program underwent an external evaluation process in 2013. The MS Department has partially addressed the recommendations made by the HQA External Evaluation Committee as several of them were beyond its control to act upon. There has been no other evaluation that the AP is aware of. There is awareness of the importance of the external evaluation process by the MS Department and the members of the staff in particular.

Panel judgement

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

Panel Recommendations

Feedback from industry is recommended, potentially in the form of an industrial advisory board.

PART C: CONCLUSIONS

I. Features of Good Practice

- Faculty is well qualified and its pedagogical performance is commendable.
- Based on the group of staff that represented the faculty during our visit it is evident that they work well together and they do their very best to support the students.
- As a result, former graduates of the program and currently enrolled students praised the devotion of the faculty to the success of the program.
- Diploma Theses are of very high quality.
- A strong point of the program is the emphasis of the curriculum in basic sciences which allows the graduates flexibility to get jobs or pursue advanced education in various related fields.
- There is a pro-active effort to broaden connections with industry.
- Industrial partners spoke highly of interns from the program, especially those carrying out practical training in their companies.
- Employers of graduates were also satisfied with the individuals' performance.
- The support provided by the staff (administrative and technical) for the delivery of the program is of the highest quality.

II. Areas of Weakness

- The laboratory space available to this program (2100m²) is well below average in the University and below the norm found in similar programs nationally and internationally.
- Limited lab space and equipment causes many lab rotations.
- Buildings require external and internal maintenance and upgrades: working lavatories, disabled access, compliance with health and safety regulations, etc.
- The operating departmental annual budget is prohibitively low for carrying out the minimally expected function, i.e. teaching, research, outreach, maintenance, lab supplies, industrial visits.
- Very inflexible and bureaucratic system for timely purchasing and replacing materials and equipment.
- Low undergraduate mobility.
- Lack of a clear and transparent strategic plan.
- Missing key equipment (such as XRD machines) and some currently available instruments are outdated and need to be replaced.
- Absence of systematic approach for evaluating staff development and performance annually.

III. Recommendations for Follow-up Actions

- Establish an Industrial Advisory Board to promote stronger ties with industry, to inform the curriculum, to improve employment opportunities prior and after graduation, and to engage in collaboration for pursuing joint EU programs.
- Introduce an undergraduate program and alumni coordinator.
- Pursue taking full advantage of existing and future student mobility programs (e.g. Erasmus).
- Establish a regular meeting where alumni working and studying in Greece and abroad will give seminar on their work –these are to be attended by all students and staff of the dept. and by the University.

IV. Summary & Overall Assessment

The Principles where full compliance has been achieved are: **1,2,3,5,7,8,9,10**

The Principles where substantial compliance has been achieved are: **4,6**

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 UGP Materials Science of the
University of Patras**

Name and Surname

Signature

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