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HELLENIC REPUBLIC

H.Q.A.

HELLENIC QUALITY ASSURANCE AND
ACCREDITATION AGENCY

EXTERNAL EVALUATION REPORT

MSc in Energy Systems and MSc in ICT Systems
School Of Science and Technology
International Hellenic University

November 8, 2013



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External Evaluation Committee

The Committee responsible for the External Evaluation of the Masters Program on Energy Systems of the International University of Greece consisted of the following five (5) expert evaluators drawn from the Registry constituted by the HQAA in accordance with Law 3374/2005 :

1. **Professor Stratos Pistikopoulos** , (President) Imperial College, London, UK
2. **Professor Christos Christopoulos**, University of Nottingham, Nottingham, UK
3. **Dr. Haralambos Hatzakis**, Biotronics 3D Limited, London, UK
4. **Professor Petros Ioannou**, Univ. of Southern California, Los Angeles, CA, U.S.A
5. **Professor Nikolaos Zarzalis**, Karlsruhe Inst. of Tech, Karlsruhe, Germany

Introduction

I. The External Evaluation Procedure

The committee visited the School on November 4- 6, 2013. The External Evaluation Committee (EEC) members Professor Christopoulos, Dr. Hatzakis, Professor Ioannou and Professor Zarzalis, arrived at the site on Monday November 4, 2013 and were joined by Professor Pistikopoulos on the following evening.

On day 1, EEC met with the Chair and Deputy Chair of the University Governing Board, the Dean of the School of Science and Technology, other members of the Governing Board, the president of Institute's MO.ΔΙ.Π. and the School's OM.E.A. EEC attended a presentation by the Head of the education administration and a presentation by MO.ΔΙ.Π. . EEC was provided with a comprehensive set of reports, data, literature and other related material. Day 1 was concluded with a briefing and coordination session.

On day 2, after an initial introduction by the Dean of the School, an overview presentation was given by the School's Program Manager, followed by two overview presentations on the MSc programmes in Information Communication Technology (ICT) Systems and in Energy Systems given by the four Academic Associates. Presentations on research activities, examples of applied research, finances, student career activities and innovation and entrepreneurship were also given. EEC held separate meetings with 12 students and members of the School's administration. Day 2 was concluded with a briefing and coordination session.

On day 3, presentations on library, information technology (IT) support and special research accounts were given. Meetings were held with 8 visiting Professors, the 4 Academic Associates, the Programme Manager of the School and the Head of Educational Administrator of the University. A site visit of the School and University facilities were also organised. During the site visit, further discussions with students took place. A final meeting with the Dean and the staff of the school was held during which the first impressions of the EEC were communicated and discussed. EEC commented on the excellent organization and the high quality of the documentation material provided and thanked the Dean and his team for their efforts and full cooperation. Day 3 was concluded with a final briefing session.

II. The Internal Evaluation Procedure

EEC was provided with a comprehensive internal evaluation report supported by large amount of data; additional information was provided promptly on request from EEC. The internal evaluation report was based on annual School reports for years 2010-11 (which was found to be excellent) and 2011-12. EEC was informed that the 2012-13 report will be compiled in spring of 2014. Typical material provided included student evaluations reports, MSc dissertations, sample examination papers, as well as marking and assessment methods and criteria used. The material provided was judged to be of similar high standards to other Universities in Europe,

US and elsewhere.

A. Curriculum

To be filled separately for each undergraduate, graduate and doctoral programme.

APPROACH

The goals for the two programmes are:

- (i) a thorough and comprehensive grasp of the technical principles and applications of ICT Systems and Energy Systems (conventional and renewable energy production and efficiency), together with managerial and conceptual skills,
- (ii) a focus on technical knowledge across various industry sectors,
- (iii) excellent opportunities for networking,
- (iv) a genuine international multicultural perspective with a global focus,
- (v) high flexible qualifications suitable for a wide range of career opportunities in the ICT and the Energy Systems sectors respectively and
- (vi) an appreciation of contemporary industry issues and challenges in the modern society demands from ICT Systems and Energy Systems respectively.

The two courses were designed through market analysis studies and benchmarking exercises, to meet market needs at the interfaces between Energy Systems and ICT Systems respectively and financial and entrepreneurship activities bringing together diverse backgrounds including scientists, engineers, ICT experts and economists.

During the first two years of operation of the School, both 14-month programmes involve 4 core modules of 40 hours each and a total of 30 credits, 3 stream required modules of 30 hours each and a total of 18 credits, 2 elective modules of 30hrs each and a total of 12 credits and a MSc dissertation of 30 credits (310 total hours and 90 credits).

The EEC found that the current curricula achieve the scientific and broader objectives of the two programmes and are co-aligned with societal requirements and anticipated future needs.

A consultation process is in place in carefully, continuously and meticulously

assessing the specific modules covered in the curricula in addressing the different backgrounds of the students (engineers, economists etc.). The extensive list of elective modules offered provides an additional flexibility in meeting the students' interest, maintaining the versatility and relevance of the material offered and achieving the educational objectives of the two programmes. An example of this process is the introduction of two new foundation courses after the first year of operation of the programme in Energy Systems.

As the two programmes are taught by a pool of external visiting Professors together with the corresponding Academic Associates a continuous internal consultation and evaluation process is in place based on which elements of the programme are periodically adjusted.

IMPLEMENTATION

The design and implementation of the curricula in both programmes, based on core modules, stream required modules, a pool of elective modules and an MSc dissertation, provides an appropriate framework for meeting the objectives.

The MSc programme in Energy Systems involves a coherent and excellent stream on Energy Systems management with main focus on bridging the gap between engineering and economics. The programme offers broad and interdisciplinary training in these areas and is judged to be coherent and highly functional, with appropriate balance of material, sufficient coverage of the topics delivered by a versatile pool of experts, including lawyers, engineers, economists and other scientists.

While the current programmes on ICT Systems and the Energy Systems stream on renewable energy were also judged sufficiently appropriate, it was felt, that they could have been strengthened by the introduction and further incorporation of elements of inter-disciplinarity (for example linking ICT Systems to Energy Systems and/or ICT to e-commerce) as a clear differentiator from existing programmes elsewhere. It is important to note here that: (i) the pool of elective courses provides a strong indication towards this direction, and (ii) the need for the School to move towards this direction has already been identified as a strategic priority as manifested by the design of new MSc programmes.

EEC notes that the School is fortunate in having the services of highly motivated and qualified Academic Associates and an extensive pool of visiting Professors. However the lack of appointed Academic staff is an impediment to the School achieving its objectives and full potential – an issue that the administration is fully aware of and awaiting for the State to ratify the appointments of the 5 already elected academics.

EEC notes that the School is appropriately equipped with modern ICT, excellent library facilities and spacious teaching space. It is observed that the addition of laboratory related facilities would significantly strengthen the effective delivery of the technical component of the Energy Systems programme. This issue is being recognised by the administration and has been temporarily addressed through collaborations with local institutions.

RESULTS

EEC notes that the implementation of the curricula as outlined and discussed above achieves the training and broader objectives and goals of the School.

EEC also notes the very high success rates of the students completing their MSc programmes within the time framework, and in securing employment.

IMPROVEMENTS

The School, as also highlighted above, should consider further expanding areas where there are clear core competencies and market differentiators in order to accelerate and fulfill its impact and international remit. Suggestions include programmes combining Energy Systems with ICT Systems , Energy Systems and Smart Grids and e-commerce.

B. Teaching

APPROACH

The manageable size of the student population (MSc in Energy Systems – 31 for the 2013-14 academic year and 30 on average; ICT of approximately 15 average for the last two years of operation 2012-13, 2013-14) combined with the 4 highly dedicated, enthusiastic and fully engaging Academic Associates, the Academic coordinator and the pool of close to 50 visiting Professors in an excellent environment ensures a unique learning experience for the students, with outstanding teaching/student collaboration and almost real time support (24 hrs open access policy).

The teaching methods are very effective on the theoretical and computing based aspects while there is a need for more laboratory training, especially for the technical components of the programmes. The excellent use of modern IT technologies and outstanding support is noted and fully appreciated by the students (as also confirmed through our meetings).

All courses are assessed by a mix of written examinations and project work (one average 70%-30%). The level of the examinations and their marking is judged to be satisfactory.

Regarding the MSc dissertations, EEC notes that a plethora of carefully defined projects is on offer, and that the theses are generally of reasonably high standards – with approximately 10% leading to a journal or conference proceedings publication. EEC is of the opinion that it will be beneficial for the programmes, that the pool of MSc projects become available earlier in the academic year in order to give the students more time to conduct preliminary tasks (i.e. literature survey) prior to their full time engagement over the last 5 months. Marking of the dissertations was judged to be on the high side with a rather narrow range.

IMPLEMENTATION

The quality of teaching procedures, materials and resources was felt to be highly appropriate and up to date in meeting the stated objectives. The MSc projects ensure that there is a satisfactory link between research and teaching- this element is further enhanced by the provision of specialised elective courses with a strong research dimension. The quality and diversity of the teaching staff also contributes to the link of research with teaching which is essential for an effective MSc course.

Formal student evaluations, exit questionnaires as well as EEC's discussions with a sample of students provided ample evidence of high student satisfaction of the content of the course, and the interactions with and support by the academic staff, the academic coordinator and the 4 Academic Associates.

RESULTS

The University and the School operate a robust and strict assessment policy with clearly defined pass/fail procedures. EEC noted that the combination of dedicated teaching and support staff and well enforced assessment maximizes student

attendance, student satisfactory performance and completion (1-2 reported failures in 3 years), a policy well received and accepted by the students.

Student excellence is rewarded by the provision of scholarships and prizes representing an average of 10% of the income received from tuition fees.

IMPROVEMENTS

The School, as also highlighted above, should consider further strengthening the challenging component of the MSc dissertation to enable the students to stretch their innovative skills and achieve their full potential. This could be achieved by perhaps restructuring the assessment framework for the dissertation to include quantitative criteria of innovation, degree of initiative as well as oral presentation skills.

C. Research

APPROACH

The University and the School as part of their vision and policy strongly encourage research and publications in high quality journals in the fields of relevance to the programmes. Their expectation that 70% of an Academic Associate's time is invested in research activities is a strong indication of the School's commitment to research. The introduction of a reward scheme for high impact publications is considered an effective mechanism to promote research. The School has an annual merit review for all research active staff.

IMPLEMENTATION

Research at the School is primarily conducted by the 4 Academic Associates, and in the context of the MSc projects with contributions from the visiting Professors.

EEC noted that the quality, enthusiasm for research, and dedication amongst the Academic Associates resulted in over 50 publications and a good number of citations in the last 3 years. This is an impressive achievement considering the early career stage of the Academic Associates and the lack of active substantial research groups, with no PhD students (primarily due to the fact that the State has not yet approved the placement of the elected academic faculty in the School).

EEC also noted the efforts by the School to maintain and expand its research activities based on collaborations with the industry and other universities. The positive role of visiting lecturers from academia and industry towards this direction is also noted.

RESULTS

As highlighted above the research output and quality is found to be satisfactory considering the young age of the University, and the very small number of early career and young Academic Associates who are effectively driving the research programme of the School.

EEC noted the research output and success achieved so far – an example is the smartIHU project, an internally funded research programme which highlights the School's commitment in encouraging and supporting high quality research.

IMPROVEMENTS

The School, as also highlighted above, should consider further enhancing and expanding its research activities by building appropriate research groups. This can only be achieved by the confirmation of the appointment of full time Academic staff (still pending to date) and the subsequent efforts to raise research funds and recruit PhD students.

A clear Intellectual Property (IP), patent policy and exploitation strategy should also be developed.

D. All Other Services

APPROACH

The Administrative School structure involves a programme manager, a School Secretary and two course officers. Currently there is one Programme Manager, a Course Officer and a shared secretary with some administrative responsibilities also taken care by the Academic Associates.

EEC noted the caliber, enthusiasm and strong commitment of the programme manager and his team in establishing effective and transparent administrative procedures. An extensive and efficient electronic system for project management is in place implementing digital signatures. The high student satisfaction of the administration services is also noted.

The University supports the School via a number of services such as career office, office of innovation and entrepreneurship, library, IT support, legal, financial and quality assurance teams. EEC noted that the School and students were highly satisfied with the services provided.

The 24-hour open access policy to the University, School and its facilities is also highly commented. This is made possible by the provision of site security monitoring and control access.

IMPLEMENTATION AND RESULTS

The School houses two computing laboratories equipped with modern PC workstations with 24-hour open access policy for the students. Free internet wifi access is also provided throughout the campus.

Social clubs for students and staff were created with a diversity of subjects for cultural, athletic and other activities.

EEC noted that the current organization and infrastructure of the School's administration is considered effective for the current size of the School. The facilities and working environment of the School and the University were considered of high quality. The presence of 24/7 security is also noted.

EEC praised the 24-hour target in responding to any student request – a unique policy for any academic institution.

IMPROVEMENTS

The School should assess and carefully consider further administrative needs in the future as its programmes grow with the introduction of new MSc courses and research activities.

Support for IP exploitation (i.e. spin offs, licensing agreements etc.) should be also considered as part of a growth strategy.

A financial model for defining the level of the School's overheads should be further developed and tailored to the future needs of the School and the University.

Collaboration with social, cultural and production organizations

A main strategic focus of the School is to foster collaborations with social, cultural and production organisations in the local, national and international community.

Ample evidence of such links were provided during EEC's visit which is commendable given the young age of the School and its programmes.

Local and national industry is engaged by providing visiting lecturers, submitting projects for and supervising MSc students and interacting at the School's events and activities. The School has created a network of industrial links involving approximately 24 companies of different sizes and sectors, such as the Hellenic Petroleum, Lever, Titan, Lidl, Pepsico and others.

The University has a Memorandum of Understanding (MOU) with professional bodies such as TEE, SEPBE, SEBE etc.. It participates in programmes such as Prometheus NET, makes several presentations to the students and industry, contacts podcasts with startups, academics and other bodies, leads seminars targeted to companies and employees, cooperates with other bodies such as OpenCoffee and jointly organises events e.g. lean startup conference 2011. Recently, it has also started to offer financial support for students' internships at AIESEC.

In order to promote various activities, the School utilises the University's infrastructure, such as the state of the art fully equipped 250 seated auditorium, meeting rooms and facilities, and other available resources such as the Business Liaison Office.

E. Strategic Planning, Perspectives for Improvement and Dealing with Potential Inhibiting Factors

The School of Science and Technology (part of the public International Hellenic University) offers two vibrant, English speaking international MSc programmes and has already been achieving commendable success and growth in its first 3 years of operation. The School operates with a very small core of dedicated and competent academic and administrative staff while relying on an extensive network of external collaborators to fulfil its academic mission and overall aims.

In realising the School's future true potential in its two MSc programmes and beyond, EEC has identified a number of aspects, opportunities and factors to sustain development and promote further growth.

1. The role of the State

The role of the State is most critical in enabling the School to fill in long overdue full time Academic positions (DEP). EEC finds the delay (of several years) in ratifying the elected appointments of the first 5 Academic staff members totally unacceptable – this is **the single most important inhibiting factor** for the School to operate smoothly and further advance. EEC is of the opinion that the decision making process should be significantly shortened, and the School and the University should be given more authority and flexibility by the State in running their own academic affairs. Another specific example of this is the long time and delay it takes to approve new MSc courses. These policy changes will act as enabling catalysts to significantly accelerate the School's development, generate further income and cement its future sustainability.

EEC is also of the opinion that the State can play a positive role in the School's

further development and financial independence by leveraging the promising efforts by the School and the University to secure additional funding for their infrastructure, including buildings, appropriate laboratory space and equipment, student accommodation and other facilities.

Matching State funding for student scholarships and research will also be essential in securing and accelerating the School's and its programmes development and impact.

2. Growth and sustainability

The School and its programmes have performed an excellent financial planning exercise towards developing a sustainable business model for growth. Their current flexible business strategy involves a versatile portfolio of current and future MSc programmes together with a gradually growing research programme with strong industrial element. Their analysis clearly shows that the marginal cost for establishing new MSc courses is significantly reduced compared to the initial setup cost of the two current MSc programmes.

A critical factor for further growth and sustainability is establishing **well recognised brand name** for the University, the School and its programmes. While the School has in place mechanisms towards this direction, EEC is of the opinion that a strong brand name at the local, national and international level should become a strategic priority. A pro-active marketing strategy based on well-defined unique differentiators of the School and the programmes (English speaking, excellent facilities, services and organisation, excellent student support, interdisciplinary, interfaces between energy systems, economics and IT) will be beneficial. EEC notes that State support here through promotions to the international audience via the Greek Consulate networks, access to Erasmus students visiting Greek institutions and other activities can have a very positive impact.

The School and its programmes have already an established international character. EEC is of the opinion that the international dimension should be significantly increased. In parallel to building a stronger brand internationally, a strategic priority should be to significantly increase the current level of international students.

EEC notes the commendable efforts the School makes in establishing links with industry. EEC is of the opinion that this should continue to be a strategic priority with further focused and intensified efforts in securing long term partnerships with industrial organisations, establishing industrial studentships, encouraging University/Industry research collaborations and internships and other activities.

3. Training and Research

The School has been running two successful MSc programmes on Energy Systems and ICT with limited internal resources and staff, mainly relying on external visiting Academic staff. The two academic programmes feature a number of unique interdisciplinary training aspects primarily exploring the interfaces of Energy Systems, Economics and ICT. EEC is of the opinion that that the **interdisciplinary character** of the School programmes should be maintained and significantly strengthened as it provides a clear value differentiator. The design of the new MSc

programmes, which further explore these interfaces, is a right strategic priority towards this direction, as is the presence of a pool of national and international visiting Academic staff. This element should be balanced with the parallel recruitment of a core of full time academic staff.

The two MSc programmes operate in an environment of relevant research activities which at the moment are conducted by the 4 Academic Associates, the visiting Academics and to a smaller extent by the MSc students (in the context of their dissertations). As the School grows, it is a strategic priority the establishment of formal in-house research activities, facilities and staff which complement and significantly expand the current ongoing research activity. EEC is of the opinion that this research growth should continue to be focused on themes which are co-aligned with the School's mission and programmes, in the context of market needs and research trends.

EEC is of the opinion that there is a benefit in establishing a well-documented and transparent research and financial policy (as part of the School's and University's strategy) which may provide clarifications and procedures related to issues, such as the handling of Intellectual property (IP) and patents, conflict of interests, overhead calculations, industrial collaboration contracts, policies for staff and students doing external work and projects.

F. Final Conclusions and recommendations of the EEC

The School and its two MSc programmes involve highly enthusiastic, top quality, young and capable Academic Associates, a very capable and highly motivated Dean, programme management and administration teams and an excellent pool of international and national visiting Academics. EEC was impressed by the high standards and excellent organization of the School and the overall quality of its programmes.

EEC believes that the School and its International interdisciplinary programmes could and should serve as a possible model for the Academic institutions of the future in Greece. Therefore EEC is of the opinion that the operation of the School should be further encouraged and materially supported by the State and the local and national community and industry.

The comments that follow aim at offering further help in the development and growth of the School in becoming "an example par excellence" of its kind in the national and international Academic landscape.

Strengths

1. New model of operation, outward looking and English speaking environment that enables the institution to be competitive at the international arena.
2. International pool of visiting lecturers and collaborators.
3. High quality of educational standards – realised by robust selection procedures, continuous quality control of training programmes and excellent real time support and services.

4. High standards of organisation and professionalism.
5. High level of student satisfaction regarding quality of teaching, personal attention and support to their academic needs and career progression.
6. Importance given to the links with industry and entrepreneurial spirit permeating the whole ethos of the School.
7. A flexible model for sustainability and growth with the goal to become financially independent from the State as much as possible.
8. A quality culture in all aspects of the University and School's operations with established procedures for assessment.

Weaknesses

1. Current small size and lack of full time teaching and administration staff hinders the growth of the School and its teaching and research programme.
2. Relatively low visibility and somewhat limited brand penetration.
3. Present over-reliance on visiting lecturers with potential for "lack of ownership" and possible conflicts of interests (especially with regards to research ownership).

Opportunities

1. Significant potential for growth in the international student market.
2. Design of very promising new MSc courses in emerging interdisciplinary areas.
3. Establishment of research and PhD programmes involving national and international partners.
4. Potential for significant increase in research and industrial funding through national and international (EU Horizon2020) collaborations.

Threats

1. Uncertainty and unpredictability of the State policy and framework in creating delays and hindering operations, growth and sustainability e.g. further delays in ratifying pending appointments may damage the School's activities.
2. Congested international Academic landscape making it difficult to establish a key differentiator for the School's programmes.
3. Prolonged economic crisis may have a negative impact to State support and the ability of national students to pay tuition fees.

Key recommendations

1. Building on the new paradigm.

The School is encouraged to further develop and expand its activities and MSc programmes, significantly invest in brand building and marketing and cement its international status. This could become an effective model for the University of the future in Greece – an exciting opportunity that should not be wasted at any cost!

2. Strengthening the financial resilience of the School.

The School is encouraged to seek more international students and expand the number of MSc programmes offered focusing on its interdisciplinary areas of strength in order to establish a unique identity and sustainable financial model.

3. Incentivise staff

The School is encouraged to maintain, streamline and further strengthen the incentives for academic, administration and support staff to grow professionally within their institution. This could be achieved through financial rewards, career development and promotions, and initiatives for better research environment.

4. Balance of teaching and research.

The School is encouraged to further enhance the two existing MSc programmes and strengthen its entire academic programme by the introduction of new MSc programmes and the establishment of critical mass and further growth of research activities, involving collaborations with industry and academia, nationally and internationally.

5. Maintaining flexible structure on solid foundations.

The School is encouraged to maintain the current flexible structures involving a core activity and personnel, supplemented by an extended network of national and international visiting staff. Particular emphasis should be placed on the immediate ratification of the pending elected academic staff appointments, the further growth of the teaching and research activities and the firm commitment towards a self-sustaining financial model. This will ensure the School realises its true potential that it fully deserves.

The Members of the Committee

Name and Surname	Signature
1. <u>Stratos Pistikopoulos</u>	_____
2. <u>Christos Christopoulos</u>	_____
3. <u>Haralambos Hatzakis</u>	_____
4. <u>Petros Ioannou</u>	_____
5. <u>Nikolaos Zarzalis</u>	_____