

# EMQAL assessment report

## 1. Introduction

This report summarizes the results of the assessment of the European Master in Quality in Analytical Laboratories (EMQAL) carried out within the framework of the JOQAR project with the aim to assess joint programmes in one single accreditation procedure.

The assessment has been conducted according the procedure and assessment criteria defined in the “Assessment framework for joint programmes”<sup>(1)</sup> designed for this purpose.

Following this framework and the ECA’s Principles for the selection of experts, a panel has been proposed by AQU Catalunya as coordinating agency and it has been approved by the Coordination Point. The panel is chaired by Emeritus Professor Guido Langouche an academic expert with extensive experience in Quality Assurance in Higher Education and includes experts in the discipline of the master degree both from the academic and professional field and/or with knowledge of the quality assurance system of some of the countries in which the joint programme is offered. The panel also includes a student with knowledge on experimental sciences and international experience. The panel secretary belongs to the staff of the coordinating agency. (See Annex A)

Prior to the visit the panel members have received the Self Evaluation Report (from now on SER) prepared by EMQAL and have been asked to read it and verify whether the programme meets the common and national assessment criteria defined in the framework. As a result of this process, the panel members have been requested to point out those aspects which need further clarification and need to be discussed with the stakeholders during the site visit.

The panel chair has also asked the panel members to read prior to the site visit some of the master theses produced by the students to assess the level of the achieved learning outcomes. Just before the site visit, two of the panel members, Elena Valderrama (academic expert) and Carme Edo (secretary) have attended the JOQAR workshop on 27<sup>th</sup> November 2012 in The Hague, where the assessment methodology and the key aspects of the participating programmes have been discussed.

The site visit has been conducted at University of Cadiz considering that UCA is the host University of the master for the academic year 2012-13 and all the students are located there during this year.

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<sup>1</sup> ECA - Assessment framework for joint programmes ([www.eaconsortium.net](http://www.eaconsortium.net))

The site visit has been carried out on December 12th and 13th 2012 following the agenda (See Annex B) prepared in advance by the Coordinating Agency taking into account suggestions from the Chair of the panel and from the EMQAL Programme Coordinator. The agenda has been finally approved by the Coordination Point. During the visit, the different stakeholders have been interviewed; when necessary, videoconference interviews have been conducted. (See Annex C)

The visit concluded with the presentation of the preliminary findings by the panel to the programme coordinators in the afternoon of December 13<sup>th</sup> 2012.

The following assessment is based on the EMQAL Self Evaluation Report and the Annexes provided by the programme and the evidence gained through the panel site visit.

## 2. General overview

### 2.1. Overview of the joint programme

- Name(s) of the qualification
  - Portugal:** Mestre em Qualidade em Análises (DR IA nº60, 24/3/2006, Dec-Lei 74/2006)
  - Spain:** Master Universitario Erasmus Mundus en Calidad en Laboratorios Analíticos (Real Decreto 1002/2010, BOE 06/08/2010)
  - Poland:** Magister [w zakresie] Jakości Laboratoriów Analitycznych (Dz.U. Nr 196, proz.1167)
  - Norway:** Master I naturvitenskap (Approved by UiB on 12<sup>th</sup> June 2008, case no. 55/08)
- Number of credits; 90 (93 when research thesis is carried out in Portugal)
- Specialisations (if any); No specialisations.
- ISCED field(s) of study;
  - 442 – Chemistry
  - 46 – Mathematics and Statistics
  - 345 – Management and Administration
- Locations: Algarve (Portugal), Barcelona (Spain), Cadiz (Spain), Bergen (Norway), Gdansk (Poland)

### 2.2. Overview of the consortium

Partner	Country /	Legal status	Role in the Joint	Degree
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	Region		Programme	Awarded
Universidade do Algarve (University of Algarve) - UAlg	Portugal	Public University	Coordinator	Joint or Double Degree
Universitat de Barcelona (University of Barcelona) - UB	Spain / Catalonia	Public University	Partner	Joint or Double Degree
Universitetet i Bergen (University of Bergen) - UiB	Norway	Public University	Partner	Joint or Double Degree
Universidad de Cádiz (University of Cadiz) - UCA	Spain / Andalusia	Public University	Partner	Joint or Double Degree
Politechniki Gdanskiej (Gdansk University of Technology) - GUT	Poland	Public University	Partner	Double Degree
(China South University) - CSU	China / Hunan	Public University	Partner ( *)	Does not issue diplomas

(\*) The role of CSU is limited to receiving students for completing 15 ECTS of the thesis.

According to the structure of the programme (60 + 30 ECTS), diplomas are issued by two European partner universities.

### 2.3. Overview of relevant external quality assurance

Higher Education Institution	Country / Region	QA /Accred. Agency	Accreditation Status	Date of Approval	Validity period
University of Algarve -UAlg	Portugal	A3ES	Preliminary Accreditation	2/3/ 11	5 years
University of Barcelona-UB	Spain / Catalonia	ANECA (*)	Ex-ante Accreditation	22/6/09	4 years
University of Bergen - UiB	Norway	NOKUT/UiB	Recognized / Accredited	18/3/08	
University of Cadiz - UCA	Spain / Andalusia	ANECA	Ex-ante Accreditation	22/6/09	6 years
Gdansk University of Technology - GUT	Poland	PKA	Not Accredited	-	-

(\*) Since 2010 AQU Catalunya replaces ANECA as Accreditation Agency of University of Barcelona

## 3. Assessment criteria

### Standard 1. General conditions

#### Criterion 1a: Recognition

*The institutions in the consortium are legally recognised as higher education institutions and their respective national legal frameworks allow them to participate in this joint programme. If the joint programme awards a joint degree then this should be in accordance with the legislation governing the awarding institutions.*

Findings: The documents analysed show that all partners are legally recognized as higher education institutions in their own country. The SER contains specific reference to national recognitions of the degree as well as copy of the accreditation awarded in Portugal, Spain and Norway.

Diplomas are issued by two European partner universities. Joint degrees are awarded except when GUT is one of the partners in which case double degrees are issued.

Conclusion and recommendations: Criterion on recognition is fulfilled and the panel has no recommendations on that.

**Criterion 1b: Cooperation agreement**

*It is clear from both the cooperation agreement and the subsequent implementation that the partners in the consortium agree on the following points:*

- *Overall coordination of the programme and/or sharing of responsibilities;*
- *Admission and selection procedures for students;*
- *Mobility of students and teachers;*
- *Examination regulations, student assessment and recognition of credits in the consortium;*
- *Type of degree (joint, multiple) and awarding modalities;*
- *Teaching language(s);*
- *Coordination and responsibilities regarding internal quality assurance;*
- *Administration of student's data and performance records;*
- *Support for student mobility;*
- *Public information on the programme;*
- *Financial organisation (including sharing of costs and incomes, charging registration and/or tuition fees, grants and fellowships);*
- *Change in partnership.*

Findings: The SER includes in Annex A the coordination agreement signed by high representatives of the partner universities. From the cooperation agreement it is clear that:

- The partners state their commitment of developing their collaboration by offering an integrated programme. They cooperate on common standards for admission, a common application procedure and a joint selection of candidates based on transparent selection procedures. The procedures related to these processes are described in the EMQAL Quality Manual.
- The partners have defined the language, the structure and the curriculum development of the study programme.
- The partners have agreed to the degree awarded.
- The partners have defined a Quality Policy and have developed a Quality Management structure of EMQAL including the Quality Manual (QM) of the programme. The QM is an integrating part of the Cooperation Agreement.

- Duration and modifications of the agreement have been established.

The QM and the procedures included describe in detail all the aspects of the organization and management of EMQAL including financial issues, mobility, and the rest of points listed above. During the visit the panel posed several questions to the Interviewees to clarify some aspects which needed further attention. Above all, the panel asked about student records and promotion of EMQAL. The findings on those aspects are the following:

- Concerning the student records it has been agreed that they are kept in the two European partner universities in which the students have stayed during the master.
- The QM describes the actions established for the promotion of the programme such as dissemination activities to reach out to third-country students, pamphlets, brochures and communication networks. Actions from the EU to third-country students are well established but there are few actions addressed to European students. Nevertheless, the number of students enrolled has been decreasing over last years. EMQAL representatives are aware of this problem and are working on it. To make EMQAL sustainable, they open some EMQAL modules to students coming from other programmes offered by the universities.

Conclusion and recommendations: Criterion on cooperation agreement is fulfilled. The panel recommends working out a consolidated database to keep track of student records in order that they remain accessible in the years to come.

The panel is concerned about the decreasing number of students enrolled per year therefore recommends to explore more ways and marketing strategies to attract more students.

The panel considers a good practice including the Quality Policy and the QM as an integrating part of the Cooperation Agreement. This proves a full agreement between partners in all the aspects related to the master programme, not only the organizational ones but those related to the content and development of the curriculum.

**Criterion 1c: Added value**

*The programme can demonstrate the added value of offering this joint programme in international perspective.*

Findings: The programme describes the European added value at a range of different levels taking into consideration the different stakeholders:

- Nature of the programme: The programme contributes to the harmonization of analytical procedures and the comparability of analytical results at and international level.

- European Policy: The Master promotes the implementation of European Standardization Policies in quality control, environment motorization, food control and public health.
- European society: The modular structure of the programme is flexible to respond directly to European professional development needs.
- European Research Area: The developed network ties establish solid international research contacts.
- European Higher Education Area: The proposal enhances the European Higher Education Area by encouraging trans-national mobility, the fostering the mutual recognition of qualifications and encouraging interdisciplinary training.
- Trans-European added value: Including in EMQAL non-EU universities contributes to extend the benefits beyond EU borders.
- Added value for students: the benefits of studying in this joint programme are immense since students are exposed to an international environment.
- Added value for institutions: The institutions combine their diverse individual strengths and build a specialised programme with high quality teachers and infrastructure offering very interesting learning opportunities.
- Added value for employers: The experience in joint masters has been found to give considerable added value to graduates' CVs, when employers are seeking people who are flexible and adaptable to different environments.
- Added value for staff: For academics, the programme also provides professional development opportunities outside a national context, and facilitates research contacts and projects in Europe.

The panel wanted to know whether the programme can demonstrate the added value of offering this joint programme in international perspective. International added value means acquiring international competencies like learning to work with people from other countries and of different backgrounds. Students have been asked if the programme gives opportunities to work together with colleagues and if they get group assignments. Students explained they work in groups many times and groups are created on a random basis to facilitate the contact with as many students as possible.

Lecturers seem quite satisfied and are of the opinion that despite the technical difficulties of organizing such a programme, the extra effort needed to participate in it and the cultural differences between the different partners, there is clearly added value to such a programme.

Employers were of the opinion that the programme is of particular value for students outside the EU since they learn about accreditation procedures which in general are not developed in their home countries.

Conclusion and recommendations: Criterion on added value is fulfilled.

The panel considers that the Master programme promotes the knowledge and diffusion of European best practices in the management of quality in analytical laboratories and of the different countries regulations. Additionally, the panel realizes and welcomes that students acquire international competencies, working with people with different cultural and technical backgrounds.

## **Standard 2. Intended learning outcomes**

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### **Criterion 2a: Shared**

*The intended learning outcomes are developed and shared by all partners.*

Findings: The competencies and intended learning outcomes of EMQAL are defined at three levels (Programme, discipline and module level) according to the structure of the study programme (See Criterion C-3b). Upon the completion of the credits associated at each level, students acquire the corresponding LO:

PROGRAMME (EMQAL)	10 Global Competencies after the completion of EMQAL
DISCIPLINES	LO after the completion of 10 ECTS from a discipline
MODULES	LO after the completion of an individual module

The competences and the intended learning outcomes for the study programme are described in the Quality Manual. Upon successful completion of the programme, ALL graduates will be able to:

- 1) design, implement and manage a Quality System in an analytical laboratory;
- 2) develop and evaluate a quality control scheme for a given type of measurement;
- 3) fully understand, both at theoretical and practical level, a set of advanced analytical techniques;
- 4) research, develop and validate new techniques and methods of analysis;
- 5) plan a validation programme for a given method of analysis;
- 6) identify critical aspects in a given method of analysis
- 7) estimate the uncertainty for a given analytical result;

- 8) develop Reference Materials;
- 9) organize and evaluate Collaborative Studies;
- 10) fully understand the current state of worldwide standardization and comparability of analytical results.

In addition, the QM also describes the specific intended learning outcomes defined for each discipline (Quality Management, Analytical Methods and Data Analysis). This intermediate level of LO facilitates the design of disciplines and helps students identify the pathway (discipline) they want to pursue.

Finally the description of the study programme includes the LO linked to each single module. This information is included in the QM.

From the quality procedure QP01 "MANAGEMENT STRUCTURE" it is clear that all partners participate in the definition and revision of competencies and intended learning outcomes.

The panel noticed a few modules do not have descriptors in Annex E of the SER.

Conclusion and recommendations: Criterion on learning outcomes is fulfilled. The relation between global competencies and module LO is clear, nevertheless the panel recommends explaining further the relation between discipline related LO and module related LO.

**Criterion 2b: Level**

*The intended learning outcomes align with the corresponding level in the Framework for Qualifications in the European Higher Education Area (the so-called Dublin descriptors) or the European Qualifications Framework.*

Findings: As described in Criterion 2a, after the completion of EMQAL students achieve a set of ten general competences and the SER contains more detailed descriptors of the different modules.

Intended learning outcomes have been accredited at national level in Portugal, Norway and Spain considering national descriptors equivalent to the Dublin descriptors.

Conclusion and recommendations: Criterion on level is fulfilled.

The panel has no doubt that the intended learning outcomes are aligned with the corresponding level in the European Qualifications Framework.

**Criterion 2c: Subject/discipline**

*The intended learning outcomes comply with the requirements in the subject/discipline and, where applicable, the professional field.*

Findings:

The Learning Outcomes of EQMAL were originally developed by the consortium in accordance with the needs of professional accredited laboratories with the objective of fulfilling the qualification needs in the field of laboratory accreditation. The three main disciplines: Quality Management, Analytical Chemistry and Data Analysis are the three areas necessary to prepare a good laboratory manager.

The panel had many discussions about the balance between the theoretical part of the programme and the practical laboratory work. Previous Examiners' Board Reports and surveys run on students and graduates suggested that this balance was not achieved and that more laboratory work needed to be introduced to comply specifically with the general *LO 3) fully understand, both at theoretical and practical level, a set of advanced analytical techniques*. Upon a wide discussion about this issue with the different groups with differences of opinion, the panel got the impression that an improvement has been reached in order to achieve this balance in the current year with respect to previous editions.

Conclusion and recommendations: Criterion on subject is fulfilled. The experts and the professionals in the panel confirm that the learning outcomes comply with the requirements of the discipline and the professional field.

### **Standard 3. Programme**

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#### **Criterion 3a: Admission**

<i>The admission criteria and selection procedures are in line with the joint programme's level and discipline.</i>
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Findings: The admission criteria and selection procedures are described in the procedure QP-3 of the QM "Procedure for the selection of candidates". The QM includes detailed information about the admission requirements and procedures. Detailed flowcharts help to understand the steps of the process.

All applications are examined according to the Lisbon Recognition Convention. First cycle degrees should give access to second cycle programmes, in this case the Masters. Applicants must therefore hold a Higher education qualification which is considered as any degree, diploma or other certificate issued by a competent Higher education authority attesting the successful completion of a higher education programme of at least 180 ECTS.

Applicants that fulfil this criterion are ranked following the Qualitative Selection Criteria detailed below.

#### Qualitative Selection Criteria

The procedure of the evaluation process is based on the Marie-Curie European Integration Fellowships and is designed to allow the evaluators to identify and select highly qualified and motivated students.

Applicants are divided into two categories: Category A and Category B depending on the country they come from. Applicants are selected considering the number of places reserved for ERASMUS MUNDUS Studentships category A and B students.

Conclusion and recommendations: Criterion on programme is fulfilled.

The panel is worried about the fact that a few students start very late the curricular year. These situations should be avoided by all possible means. Applicants should be informed well ahead of possible delays in the procedure and the organizers should try to anticipate difficulties for particular countries and to help the applicants as much as possible.

**Criterion 3b: Structure**

*The structure and content of the curriculum and its pedagogical approach correspond with the intended learning outcomes.*

Findings: The Masters course has a total of 90 ECTS. The 60 ECTS of the first year correspond to the integrated taught (Curricular) part of the master. The next 30 ECTS correspond to a research project (Master thesis). The curriculum is fully recognised by all the European institutions of the consortium. The curriculum content is jointly delivered by the teaching staff of all the institutions. Each of the five European consortium institutions offers at least 12 (20%) of the taught credits, resulting in a fully integrated curriculum of 60 ECTS. The integrated curriculum is hosted in turn at all the European member institutions in subsequent years. There are no parallel national courses. The curriculum is not based on a single national master, but does rotate through the institutions, thereby reducing duplication in one year and keeping all the students together for the first few months. A minimum of 30% of the ECTS (30 credits) must be taken in a second country as a research project.

Some students take part of the research project in China, under the supervision of CSU, for a maximum of 15 ECTS credits (equivalent to three months). The other 15 ECTS of the research project take up in one of the other partner institutions. The panel recommends to the consortium to verify whether this 15 ECTS does not cause problems since in most locations 20 ECTS is a minimum student visa requirement.

The taught part of the course is a fully integrated programme consisting of 3 main disciplines: Quality Management; Analytical Methods and Data Analysis. These three disciplines are crucial for a successful laboratory manager, so students must gain a minimum of 10 ECTS in each. The remaining 30 ECTS can be made up from any combination of modules to best suit the

professional development of the student, chosen from any of the three disciplines. The EMQAL course is very flexible and all modules are optional. Students can build their study plan of 30 modules (60 ECTS) from the existing optional 2 ECTS modules. Each study plan must fulfil the General Learning Outcomes of the course and include at least 10 ECTS from each of the key disciplines of the Master.

The programme coordinator guides the new students to design their own study plan in order to fulfil the requirements just mentioned.

The QM contains the contribution of each module to the course learning outcomes.

Lectures of one module are taught in the term of one week to facilitate the professors' mobility. Students complain that occasionally three modules can be offered during the same week and, consequently, they cannot take some of the modules offered.

The Programme Coordinator indicated they are trying to distribute modules considering the students profile and attempting to avoid module overlapping.

Students also would appreciate more practical work in companies.

EMQAL will increase from 90 to 120 ECTS starting next edition

Conclusion and recommendations: Criterion on structure is fulfilled.

The panel understands that the module teaching system used in EMQAL is a very practical way of delivering the programme, but that it is sometimes a hard system. The organizers should avoid, when possible, to offer more than two modules in the same week. Since the number of the EMQAL credits will be increased to 120, the panel suggests investigating the possibility of using part of these extra credits for training periods in industry or private laboratories. There is also the suggestion to organize during the first year short encounters with industrial representatives in order to discuss the technology or problems in specific fields.

The panel recommends that efforts continue to be made to attribute to the host institution the lecturing of the larger number of modules, mainly those that have a practical laboratory component to allow for an easier preparation of the experimental classes. Also efforts should be continued to attribute a fair percentage of experimental hours to Analytical Methods modules.

**Criterion 3c: Credits**

*The distribution of credits is clear.*

Findings: The QM includes a detailed description of the credits distribution. The programme has 90 ECTS. 60 ECTS correspond to curriculum and 30 to the master thesis. The master offers a wide range of 2 ECTS optional modules to build the 60 ECTS of the curriculum. The master

thesis is 30 ECTS except when it is done in Portugal. In this case, and in order to fulfil national regulations the master thesis is worth 33 ECTS. (This exception will be waived in the future with the new EMQAL programme proposal, worth 120ECTS, already approved by the EU)

Conclusion and recommendations: Criterion on credits is fulfilled and the panel has no recommendations on that.

**Standard 4. Internal quality assurance system**

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**Criterion 4a: Common understanding**

*There is a common understanding of the internal quality assurance system for this joint programme in which responsibilities are clearly shared and coordinated.*

Findings: The Universities in the Consortium have agreed on a common EMQAL Quality Policy Statement. This Statement includes the mission, the vision and the objectives of the programme.

The agreement is also extended to the internal quality system set up for the EMQAL and defined in the Quality Manual (QM).

Both the Quality Policy and the Quality Manual (QM) are included in the consortium agreement. Therefore, they are approved by high level representatives of all partners of the Consortium.

The Quality Manual describes the general organization of the joint programme and includes the Quality Policy and Quality Objectives of EMQAL.

The QM, also describes the responsibilities regarding the elaboration, revision, approval and distribution of quality assurance documents within EMQAL:

<b>Document level</b>	<b>Elaboration</b>	<b>Revision</b>	<b>Approval</b>	<b>Distribution</b>
QM	PMT	PMT	Highest representatives of all partner institutions	PC
QP	PC or any element of the PMT	PC or any element of the PMT	PMT	PC
TP, M	PC or any element of the PMT	PC or any element of the PMT	PMT	PC

The Quality Procedures (QP) develops the principles behind the QM describing with more detail the implementation procedures.

There are seven Quality Procedures defined in the EMQAL Quality System:

QP01 – Management Structures

QP02 – Structure of the Study Programme

QP03 – Selection of Candidates

QP04 – Management of Complaints and Suggestions

QP05 – Internal Quality Assurance

QP06 – External Quality Assurance

QP07 – System Review

In particular the QM (section 7) and the procedure QP01 – “Management Structures” show the composition and responsibilities of all government positions and bodies related to the joint programme. The most relevant are:

The **Programme Coordinator** (PC) has overall responsibility for the programme working in close collaboration with the **Programme Management Team** (PMT).

The PC is elected by the PMT for a period of five years. She or he is responsible for the correct implementation of the functions of Quality Management and the scientific quality of the programme.

The PMT includes an academic representative from each of the Universities.

The post of **Programme Director** (PD) rotates to lie within the university hosting the taught component of the degree in any one year. The PD works closely with the PMT which has the following terms of reference: assist the PD with academic administration of the course; assist with the day-to-day operation of the programme; assist with the recruitment and induction of students; preparation of the programme calendar including timetabling and administration of the Dissertation selection and supervision; assist with the publicity and marketing of the programme and obtaining external sponsorship; assist with careers guidance; assist with personal tutoring and the management of research projects.

The **Examiners’ Board** (EB) is responsible for the evaluation of the course and reports to the PCm. It consists of representatives from three universities: the previous year's hosts, the current year's host and the next year's host. The EB reports to the PCm

The **Programme Committee** (PCm) is responsible for proposed policy developments, academic standards and any substantial matters affecting course delivery. It meets at least once a year to review the implementation of policy, development of the programme and student feedback. It is also responsible for the annual review of the programme.

This review and the feedback from the students feed into the annual reports.

The panel consulted and discussed Annual Reports and appreciated them as an efficient way to follow up on the internal quality assurance of the programme.

Conclusion and recommendations: Criterion on common understanding is fulfilled.

The panel was impressed with the quality of the policy statement, the vision and objectives of the consortium. The Annual reports allow monitoring the evaluations and the continuous improvements of the programme. The Quality Manual of EMQAL is also of high quality; the panel just adds the suggestion to include in the Quality Manual a clear path for students to follow whenever they encounter a problem.

**Criterion 4b: Stakeholder involvement**

*The stakeholders (students, staff, employers, graduates, etc.) are involved in the internal quality assurance activities (including graduate surveys and employability issues).*

Findings: The Programme Committee (PCm) has clear responsibilities in the internal quality assurance activities (see Criterion 4b). The PCm includes representatives of the partner institutions, representatives and observers from collaborating organisations from the professional field to ensure the courses retain relevance to the “world of work”, student representatives (1 representative for every 20 full-time students), one representative of module leaders and one project supervisor.

Conclusion and recommendations: Criterion on stakeholder involvement is fulfilled.

Concerning the stakeholders’ involvement, the panel appreciates the feedback received from students, alumni, lecturers and from the professional field. The panel considers that feedback from research project students should also be sought and that the feedback from employers could be increased.

**Criterion 4c: Continuous improvement**

*The effectiveness of the system with regard to the continuous improvement of the programme can be demonstrated.*

Findings: The EMQAL QM includes in QP05 the Annual Quality Assessment of the Study Programme. The study programme is evaluated at least annually. This evaluation is summarized in a report prepared by the Examiners Board, based on the evaluation of the modules lectured in that year, on the evaluation of the host institution for the taught programme in the same year, and on the evaluation of the research projects from the previous year.

The EB report is analysed in the System Review by the PCm. Based on the report, the PCm may recommend changes for the next study plan. These actions are implemented by the PMT.

The panel has had access to the Annual Report of the EB for the years 2011 and 2012. These reports are structured as described below:

1. General description of EMQAL (Structure, modules, management).
2. Students and funding (Selection of Candidates, Number of Modules, Costs and Mobility, Distribution of Research Theses and Funding).
3. Description of the students' performance (Curricular Year, Research Thesis and Student initiatives).
4. Alumni Information.
5. Current Academic Year: 2011/2012 (Quality Assessment, Annual Questionnaires 25).
6. Quality Assessment (Main positive aspects of the course, Follow up of corrective actions from previous editions and Detected negative points / suggestions for improvement from past edition).

The Annual EB reports present the results of the annual questionnaires filled by the students including the individual comments gained through these questionnaires.

The EB analyses all the information available including a follow-up of corrective actions from previous editions. As a result of this analysis, the EB detects improvement areas to be addressed by the PMT during the following edition.

From the revision of the 2011 and 2012 Annual EB reports the panel has verified the correct implementation of the continuous improvement procedures:

- Student opinions are taken into account and the problems pointed by them are addressed.
- Some corrective actions, such as a correction of the balance between the theoretical part of the programme and the practical laboratory work, have been applied with satisfactory results.

The panel has confirmed the quality of the continuous improvement procedures by asking the students their major concerns and complaints and the way those have been attended. As an example in the past students complained about the lack for laboratory time while this year compared with the last year this aspect has been improved.

On the other hand the panel noticed that some complaints were still present one year later and believes that in some cases it takes too much time to see the results of the corrective actions.

EMQAL also takes into account the opinion of lecturers in the continuous improvement but has not established extensive surveys for the employers.

Conclusion and recommendations: Criterion on continuous improvement is fulfilled. The panel recommends including in the process the feedback from research project students and employers.

The panel considers the EB annual report a good practice for the continuous improvement. However, the panel recommends EMQAL improving the report including some indicators about the programme such as the number of graduates, the number of drop-outs, the reasons for drop-outs... and in case, a justification of them and a way to improve them.

## **Standard 5. Facilities and student support**

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### **Criterion 5a: Facilities**

*The facilities provided are sufficient and adequate in view of the intended learning outcomes.*

Findings: Facilities are difficult to evaluate since the panel has had no access to the facilities in all partner universities. Nevertheless, the panel has been able to assess the facilities using alternative ways:

- The SER includes a general description of common facilities available at all partner universities. (classrooms, laboratories, library, computer rooms ...) The SER also includes a detailed description of the laboratory at UAlg.
- The PC presented the laboratories available at all the partner universities showing pictures of all of them. Equipment and rooms seemed adequate for the development of the practical work of the master.
- The panel asked teachers and students about the laboratories available at the different sites. In their opinion laboratories are sufficient for the practical work of the master. Additional equipment is available for students during the thesis research.
- The panel visited the library and the laboratory of UCA.

Conclusion and recommendations: Criterion on facilities is fulfilled.

### **Criterion 5b: Support**

*Student support provided by the joint programme contributes to the achievement of the learning outcomes and, where applicable, to designing individual study pathways.*

Findings: Student support is provided before, during and after the curricular year.

The Programme Director and the Programme Coordinator advise the students on building their study plan. So far students are satisfied with the support received.

The Programme Director follows closely the students during the curricular year to help if necessary.

Since the programme is built of 2 ECTS modules, visiting teachers usually spend only one week at the host university. Feedback from these teachers is mainly done by e-mail. Most students get regular feedback, however in rare cases feedback is hard to get.

To promote the communication between teachers and students, EMQAL has created a portal for online discussion hosted at UiB although the students do not use it on a regular basis for this purpose.

Students know the procedure when they have an academic problem: first they contact the module teacher; if they do not get a satisfactory answer they can contact the Programme Director and later the Programme Coordinator; finally they can contact the External Examiner. Students would appreciate clearer criteria when choosing the second year location.

Conclusion and recommendations: Criterion on support is fulfilled.

EMQAL offers adequate support in designing study pathways. This aspect is especially relevant in a programme built of modules of 2 ECTS.

The panel found that it would be very useful to stimulate both the teachers and students to make more intensive use of the platform for online discussion hosted by Bergen University.

The panel strongly recommends measures to be taken to assure that all students get proper and on time feedback from professors once the week of lectures has finished.

**Criterion 5c: Services**

*The programme provides adequate student services to facilitate mobility (e.g. housing, guidance for incoming and outgoing students, visa issues, etc.).*

Findings: The SER describes the services provided by the programme to the students to facilitate mobility available in each partner university. All partners seem to provide common services such as: international office services, housing/accommodation, health services etc.

The QM provides information about the role of one of the key pieces in this process, the Programme Director.

EMQAL representatives have been asked about their participation assisting students before and during their enrolment in EMQAL. The panel was told the students receive an extensive guide for students prior to the arrival. University services help students to deal with the paperwork necessary for visa issues, grants, enrolment...

Some visa problems are difficult to deal with. In particular, students coming from Kosovo have many troubles to get a visa in Spain.

Students have been asked about the services offered at UCA. In general they are satisfied with the services available. During the conversation with students some aspects were pointed out:

- Students are very satisfied with the housing arrangements. Upon their arrival they were offered one month free housing at a student housing centre. This benefit gave the students the opportunity to settle down conveniently and to focus from the beginning on the programme.
- Students were in general satisfied with the help they received to solve academic and personal problems. In particular this year they were very pleased with the help they are receiving from the Programme Director at UCA.
- Students would appreciate to have more contact with local students; they feel a bit isolated.
- Students complained about their status at UCA: they are not considered as Erasmus students and they cannot take advantage of Erasmus student benefits.
- Graduates complained they don't get the diplomas on time and sometimes this is a problem when trying to get a position.

Conclusion and recommendations: Criterion on services is fulfilled. The panel recommends EMQAL to facilitate students to socialize with locals and to participate in Erasmus students activities.

The panel also recommends working more closely with students coming from “problematic-getting-visa countries” in order to anticipate the difficulties.

## **Standard 6. Teaching and learning**

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### **Criterion 6a: Staff**

*The composition of the staff (quantity, qualifications, professional and international experience, etc.) is adequate for the achievement of the intended learning outcomes*

Findings: The panel has had access to the curriculum vitae of most of the lecturers of EMQAL. The CVs show lecturers have research and teaching experience in their field of expertise. They have international experience and relevant publications in the field. The number of lecturers is adequate for the programme.

In the opinion of students the teachers demonstrate their expertise in the field. In rare cases they found some teachers with a lack of good proficiency in the use of the English language.

Conclusion and recommendations: Criterion on staff is fulfilled. The teaching staff of EMQAL is adequate for the purpose of the master. The panel suggests devoting continuous attention to the proficiency in the use of English language by the lecturers.

**Criterion 6b: Assessment of students**

*The examination regulations and the assessment of the achievements of learning outcomes are applied in a consistent manner among partner institutions and oriented to the intended learning outcomes.*

Findings:

Due to the structure of the programme, EMQAL has well-defined coordination responsibilities. The role of the PC and the PMT are crucial to assure the assessment procedures are applied in a consistent manner. The PMT meets once a year, the coordination and the management of the programme and the academic staff are reinforced with monthly videoconferences.

The PC has overall responsibility for the programme working in close collaboration with the PD and the PMT. Each element of the PMT is the representative of EMQAL in the home university and, as such, has the responsibility to inform the lecturers from the home university who are participating in the course on the rules and relevant documentation, for example for module development and grading the students.

The Agreement between the universities covers assessment regulations (pass and fail). Most student evaluations are based on student output rather than examinations or tests. The criteria are described fully in each Module descriptor and grading is based on ECTS. Evaluations taken at one institution are recognized fully and automatically by the other institutions in the consortium.

Module descriptors include Assessment Methods and assessment criteria. A range of different assessment methods are used based on work assignments such as laboratory reports, operating procedures, laboratory audits, literature review, seminar or poster presentations.

Two different grades are used simultaneously to evaluate students in EMQAL:

The ECTS grading scale is used to facilitate credit transfer and transparency. This scale ranks students on a statistical basis. An absolute scale of 0-100 is also used for the assessment of the students, according to their degree of achievement of the objectives of the module.

In addition EMQAL is working on actions for the continuous assurance of homogeneity of the grading and the evaluation of research work at the different partner institutions.

Lecturers believe that the assessment by performance and the assessment by assignments are adequate to the structure of the programme.

Conclusion and recommendations: Criterion on achievement is fulfilled.

The panel appreciates the efforts made to homogenize the grading especially of the thesis work at the different partner institutions and suggests continuing the effort.

**Criterion 6c: Achievement**

*The programme can demonstrate that the learning outcomes are achieved.*

Findings: As described in the QM the intended learning outcomes related to the modules are achieved upon the successful completion of each module. The SER includes a clear relation between the 10 global competencies and the successful completion of the master theses.

A good indicator demonstrating that the learning outcomes are achieved is the fact that EMQAL graduates are employed in positions directly related to the fields of the master in accredited laboratories, laboratories seeking accreditation, accreditation agencies, quality management consulting, etc.

The panel also assessed the achievement of the learning outcomes by reviewing some of the master theses (between ten and twenty) prepared by EMQAL students.

Prior to the visit the panel has had access and has reviewed master theses produced during the years 2010, 2011 and 2012. The panel had full access to the theses from 2010, but only samples from 2011 and 2012 were available. They were judged to be of good international quality. In some of the theses the link with the EMQAL programme was less obvious.

Theses should include quality assurance contents. However, in some it is difficult to find. EMQAL representatives explained that this is difficult to prevent since in some cases students focus on “exiting results” and forget the quality assurance component.

Conclusion and recommendations: Criterion on achievement is fulfilled.

The panel recommends setting up measures to guarantee that all these include the quality assurance component.

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### **Standard 7. National component (Norway)**

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Findings: UiB is a self-accrediting institution. Hence no need to evaluate the Norway National Component.

Conclusion and recommendations: Criterion national component (Norway) is fulfilled.

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### **Standard 8. National component (Poland)**

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Findings:

The table below shows the assessment of each criterion:

1. Formal requirements regarding the length of studies Second cycle studies take at least 90 ECTS	Fulfilled
2. Staff requirements a. The minimum core staff consists of at least six teachers which hold the academic	Fulfilled

title of professor or doktor habilitowany and six teachers which hold the academic degree of Ph.D.	
b. The members of the minimum core staff have to be full-time employees of the higher education institution that offers the joint programme, and at least since the beginning of the semester. This institution has to be their primary employment.	Fulfilled
c. Each member of the minimum core staff has to teach at least 30 (for a professor or doktor habilitowany) or 60 hours of class during the academic year and within the programme.	Not Fulfilled

EMQAL is structured in 2 ECTS modules. In average lecturers teach between 1.1 and 1.7 modules each, this means most lecturers devote from 10 to 30 hours to the master. Although some lecturers dedicate more hours to the master, it does not guarantee the requirement of Polish criterion 2c. The Polish Accreditation Agency (PKA) is aware of the situation. EMQAL and PKA are working to find a solution regarding this requirement.

Conclusion and recommendations: Criterion national component (Poland) is not fulfilled in one requirement.

#### **Standard 9. National component (Portugal)**

##### Findings:

The table below shows the assessment of each criterion:

The number of ECTS credits attributed to the joint master's programme must be in the range from 90 to 120 credits;	Fulfilled
The curriculum should include an original dissertation or project, worth at least 35% of the total number of credit units (e.g. 42 credits in a programme of 120 credits);	Fulfilled
The majority of the academic staff must hold a PhD degree (for a joint master's programme offered with a Portuguese university) or be a PhD holder or a specialist (for a joint master's programme offered with a Portuguese polytechnic).	Fulfilled

Conclusion and recommendations: Criterion national component (Portugal) is fulfilled. EMQAL takes 93 ECTS when the research thesis is completed in Portugal in order to comply with the Portuguese regulations that establish that the curriculum should include an original dissertation or project, worth at least 35% of the total number of the credit units. This requirement will not be necessary in future editions when the EQMAL is worth 120 ECTS.



#### 4. Final conclusions and recommendations

First of all, the panel wants to emphasize the positive attitude of the programme representatives. They expressed they were very pleased to be selected for an external evaluation procedure. One of the reasons, they told the panel, is that they have the word “quality” in the name of the programme and therefore welcome the evaluation of their quality. They also were willing to undergo a site visit evaluation procedure because although partners have a national accreditation, they never faced such external evaluation in situ before.

The major conclusion of the panel is that **the EMQAL programme is a high quality study programme**. The panel has found that the purpose of the programme is well formulated, that it is well translated into intended learning outcomes, and that it is efficiently worked out in programme elements which allow the students to acquire the learning outcomes they are here for. The panel has found competent staff which is able to deliver these programme elements and has found that the facilities present at the different universities are adequate. Finally, the panel has checked the acquired learning outcomes as they come out from the thesis work, and has found the theses of good quality and of international level.

The main conclusion is very positive. Nevertheless the panel is expected to give some comments and to formulate some recommendations.

##### 1. General conditions

All necessary legal requirements are fulfilled, meaning that all partners are legally recognized in their own country and that the cooperation agreement between the different partners fulfils the requirements. The added value of the programme has been demonstrated at different levels; in particular the panel believes that the programme promotes the knowledge and diffusion of European best practices in the management of quality analysis laboratories and of different countries regulations.

The panel considers a good practice including the Quality Policy and the QM as an integrating part of the Cooperation Agreement. This proves a full agreement between partners in all the aspects related to the master programme, not only the organizational ones but those related to the content and development of the curriculum.

As recommendation for the continuous improvement of the programme the panel recommends working out a consolidated database to keep track of student records in order that they remain accessible in the years to come.

The panel grades the *General Conditions* of the programme as *excellent*.

## **2. Intended learning outcomes**

The panel has no doubt the intended learning outcomes are aligned with the corresponding level in the European Qualifications Framework.

The relation between global competencies and module LO is clear and the LO comply with the requirements in the discipline and professional field.

As recommendations for the continuous improvement of the programme the panel recommends explaining further the relation between discipline related LO and the module related LO and to continue the efforts to attribute to the host institution the lecturing of the larger number of modules including a fair percentage of experimental hours to Analytical Methods modules.

The panel grades the *Intended Learning Outcomes* of the programme as *excellent*.

## **3. Programme**

The admission criteria and selection procedures are in line with the joint programme's level and discipline. The structure, credits, and content of the curriculum and its pedagogical approach correspond with the intended learning outcomes.

As recommendations for the continuous improvement of the programme the panel insists that late arrivals of students should be avoided by informing the applicants well ahead of possible delays in the procedure. Since the number of the EMQAL credits will be increased to 120, the panel suggests investigating the possibility of using part of these extra credits for training periods in industry or private laboratories. There is also the suggestion to organize during the first year short encounters with industrial representatives in order to discuss the technology or problems in specific fields.

The panel grades the *Programme* as *excellent*.

## **4. Internal Quality Assurance system**

The panel is impressed with the quality policy statement, the mission, vision and objectives of the consortium and also of the quality manual.

The panel considers the Annual EB Report a good practice and a valuable tool for the continuous improvement.

As recommendations for the continuous improvement of the programme the panel suggests to include in the QM a clear path for students to follow whenever they encounter a problem.

The panel also advises to increase the stakeholders' involvement by including in the process the feedback from research project students and employers.

The panel grades the *Internal Quality Assurance System* of the programme as *excellent*.

## **5. Facilities and student support**

Facilities, student support and services meet the requirements for the purpose of the programme.

After the meeting with teachers and students the panel proposes some recommendations for the continuous improvement of the programme: it would be very useful to stimulate both the teachers and students to make more intensive use of the platform for online discussion hosted by University of Bergen; measures should be taken to assure that all students get proper and on time feedback from professors once the week of lectures has finished; measures should be taken to facilitate students to socialize with locals and to participate in Erasmus students activities; the delivery of the diploma should be hastened and a documental evidence of the successful completion should be delivered immediately after the promotion.

The panel grades the *Facilities and student support* of the programme as *good*.

## **6. Teaching and learning**

The teaching staff of EMQAL is adequate for the purpose of the master. The assessment of the students is oriented to the intended learning outcomes and the master theses demonstrate the achievement of those LO. EMQAL is making continuous efforts to ensure the homogeneity of the grading especially of the thesis work executed at the different partner institutions.

As recommendations for the continuous improvement of the programme the panel suggests devoting continuous attention to the proficiency in the use of English language by the lecturers. The panel also recommends setting up measures to guarantee that all theses include the quality assurance component.

The panel grades the *Teaching and Learning* of the programme as *good*.

## **7. 8 and 9 National Components**

Norwegian and Portuguese National components are fulfilled. All but one of the Polish requirements is fulfilled. Because of the design of EMQAL it is difficult to fulfil the requirement related to the minimum dedication of the core staff to EMQAL. Steps are being taken to solve the problem with the Polish Accreditation Agency.

Standard	Level of fulfilment			
	Excellent	Good	Satisfactory	Unsatisfactory
1. General conditions	X			
2. Intended learning outcomes	X			
3. Programme	X			
4. Internal quality assurance system	X			
5. Facilities and student support		X		
6. Teaching and learning		X		
7. National component Norway	Fulfilled (see note below)			
8. National component Poland	Not fulfilled in one requirement(see note below)			
9. National component Portugal	Fulfilled(see note below)			

Note: National components have been assessed just as “Fulfilled/Not Fulfilled”

## 5. Annexes

### Annex A - Panel Composition

Guido Langouche	Chairperson	University of Leuven	Emeritus Professor in Nuclear Solid State Physics Secretary of INQAAHE (International Network of Quality Assurance Agencies in Higher Education)
Irene Montenegro	Academic	University of Minho	Professor (full-chair) of Physical and Analytical Chemistry (retired since November 2009)
Elena Valderrama	Academic	Universitat Autònoma de Barcelona	Full Professor of Architecture and Technology of Computers (Expert in QA)
Josep Manuel Grases	Professional	Generalitat de Catalunya	Head of the technical and analytical area of the Agricultural Laboratory at the Department of Agriculture, Stockbreeding, Fishing, Feeding and Natural Environment (DAAM).
Micaela Millán Urbano	Student	UNED / Universidad P. Olavide	Pedagogy Student - UNED. Bachelor in Environmental Science, U. Pablo de Olavide
Carme Edo	Secretary	AQU Catalunya	Project Manager

## Annex B-Site Visit Agenda

### SITE VISIT SCHEDULE - UNIVERSIDAD DE CADIZ

JOINT MASTER STUDY PROGRAMME

"EUROPEAN MASTER IN QUALITY IN ANALYTICAL LABORATORIES" (EMQAL)

ECA JOINT PROGRAMME ACCREDITATION PILOT

12th December 2012, 8:30–18:00 (Universidad de Cádiz)

Hour	Activity	Participants
8:30–9:30	<b>Coordination meeting of the assessment panel</b>	Assessment panel
9:30-10:30	<b>Meeting with the representatives of the university and the representatives of the joint master study programme EMQAL</b> <ul style="list-style-type: none"> <li>• University welcome, introduction of the panel</li> <li>• University and Joint Programme introduction</li> <li>• General discussion</li> </ul>	University representatives EMQAL representatives Assessment panel
10:30-10:45	<b>Coffee Break</b>	University representatives EMQAL representatives, Assessment panel
10:45-11:45	<b>Meeting with academic staff representatives</b> discussion on study programme implementation, its development <ul style="list-style-type: none"> <li>• discussion on learning outcomes</li> <li>• discussion on quality control activities</li> <li>• discussion on human resource management (recruitment of new staff; staff development; motivation policies)</li> <li>• discussion on relations with external partners of the private and public sector</li> </ul>	Academic staff representatives Assessment panel
12:00-12:45	<b>Tour of facilities relevant to the programme</b>	EMQAL representatives Assessment panel
12:45-13:45	<b>Review of documents</b>	Assessment panel
13:45-15:00	<b>Lunch</b>	
15:00-16:00	<b>Meeting with the Administrative Units</b>	Administrative Units representatives Assessment panel
16:00-17:00	<b>Meeting with graduates</b>	Graduates Assessment panel
17:00-18:00	<b>Meeting with employers</b>	Employers Assessment panel

13th December 2012, 9:00–14:00 (Universidad de Cádiz)

Hour	Activity	Participants
9:00–10:00	<b>Meeting with students</b>	Students, Assessment panel
10:00-11:00	<b>Assessment panel meeting</b>	Assessment panel
11:00-11:45	<b>Meeting with the representatives of the joint master study programme EMQAL</b> <ul style="list-style-type: none"><li>• Pending issues emerged during the site visit</li></ul>	Joint Master representatives Assessment panel
11:30-13:00	<b>Break and preparation/synthesis of findings of the assessment panel</b>	Assessment panel
13:00–14:00	<b>Presentation of findings of the assessment panel</b>	Panel Chair to representatives of the university, the representatives of the joint master study programme EMQAL and administrative units

## Annex C - List of meetings including interviewees

### Meeting with University of Cadiz and EMQAL representatives

Name	University	Position
M <sup>a</sup> Dolores Galindo Riaño	University of Cadiz (UCA)	Dean of the Faculty of Science
Dominico A. Guillén Sánchez	University of Cadiz	Chairman of the Analytical Chemistry Department
Miquel Esteban	University of Barcelona (UB)	Professor, UB Coordinator of EMQAL
Piotr Konieczka	Gdansk University of Technology	Professor, EMQAL rep.
Bjørn Grung	University of Bergen	EMQAL local coordinator and Professor of chemistry
Miguel Palma	University of Cadiz	EMQAL local coordinator and Professor of analytical chemistry
Isabel Cavaco	University of Algarve	EMQAL Coordinator and Professor of analytical chemistry
Juan Carlos Garcia Galindo	University of Cadiz	General Director of the International Office
Alejandro Perez Peña	University of Cadiz	Chairman of the Office for Quality
Angel Olachea	University of Cadiz	EMQAL Technician in Cadiz

### Meeting with Academic Staff representatives

Name	University	Position
Miquel Esteban	University of Barcelona (UB)	Professor, UB Coordinator of EMQAL
Piotr Konieczka	Gdansk University of Technology	Professor, EMQAL rep.
Bjørn Grung	University of Bergen	EMQAL local coordinator and Professor of chemistry
Miguel Palma	University of Cadiz	EMQAL local coordinator and Professor of analytical chemistry
Isabel Cavaco	University of Algarve	EMQAL Coordinator and Professor of analytical chemistry
Angel Olachea	University of Cadiz	EMQAL Technician in Cadiz
José M <sup>a</sup> Palacios	University of Cadiz	Professor
Enrique Durán	University of Cadiz	Professor

### Tour of facilities

Name	University	Position
Miguel Palma	University of Cadiz	EMQAL local coordinator and Professor of analytical chemistry
Isabel Cavaco	University of Algarve	EMQAL Coordinator and Professor of analytical chemistry

Piotr Konieczka	Gdansk University of Technology	Professor, EMQAL rep.
Juan Antonio Domingez	University of Cadiz	Director of Puerto Real Campus Library
Angel Olachea	University of Cadiz	EMQAL Technician in Cadiz
L. Cubillana	University of Cadiz	Responsible of Laboratory Schedule

#### Meeting with Administrative Units

Name	University	Position
M <sup>a</sup> Carmen Jareño	University of Cadiz	Head of the Administrative Office
Miguel Palma	University of Cadiz	EMQAL local coordinator and Professor of analytical chemistry
Angel Olachea	University of Cadiz	EMQAL Technician in Cadiz

#### Meeting with Graduates (videoconference and skype)

Name	Location
Mary Grace Guardian	Philippines
Glauce Pereira	Brazil
Nafiha Usma	Norway
Prabal Subeki	Germany
Marta Ferreiro	Spain
Widiastuti	Indonesia
Enoch Cobbina	Ghana

#### Meeting with Employers(videoconference and skype)

Name	Company	Location
Vítor Cardoso-	Central laboratory of EPAL - Empresa Portuguesa de Águas Livres, in Lisbon.	Portugal
Francesc Centrich	Laboratory of the Public Health Agency of Barcelona, Chemistry	Spain

#### Meeting with Students

Name	Country of birth
Kahasun Abeje	Ethiopia

Romanus Ogechukwu Abia	Nigeria
Saber D.A. Elwany	Egypt
Lekhanath Kandel	Nepal
Edgar Magas	Philippines
Anabel Medina Martinez	Spain
Ruth Eloisa Sales	Philippines
Kamila Smieszkol	Poland
Pedro Sousa	Portugal
Senthil Kumar	India
Carlos Miguel Vicente Gonçalves	Portugal
Habtewold Deti Waktola	Ethiopia
Ephrem Tilahun	Ethiopia
Yang Yang	China