



**Decision of the Accreditation Commission of AQAS  
on the study programmes:**

- **“Seed Science and Technology” (MPhil)**
- **“Plant Breeding” (PhD)**

offered by the University of Ghana, Ghana

**Based on the report of the expert panel and the discussions of the Accreditation Commission in its 71<sup>st</sup> meeting on 14/15 May 2018, the Accreditation Commission decides:**

1. The study programmes **“Seed Science and Technology” (MPhil)** and **“Plant Breeding” (PhD)** offered by the University of Ghana are accredited according to the AQAS criteria for Programme Accreditation.

The accreditation is conditional.

The study programmes essentially comply with the requirements defined by the criteria and thus the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG) and the European Qualifications Framework (EQF) in their current version. The required adjustments can be implemented within a time period of nine months.

2. The conditions have to be fulfilled. The fulfilment of the conditions has to be documented and reported to AQAS no later than **28 February 2019**.
3. The accreditation is given for the period of **six years** and is valid until **30 September 2024**.

**Conditions:**

1. The admission criteria of both programmes have to be made transparent, especially with regard to the weighting of different criteria in the selection process.
2. Information on the outcome of the evaluation/quality assurance measures has to be provided regularly and transparently, e. g. feedback to students on the course evaluation in an aggregated form.
3. The university has to draft measures to limit the time period for thesis review in the Master programme.

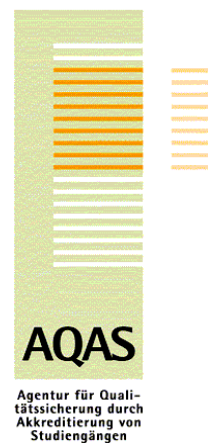
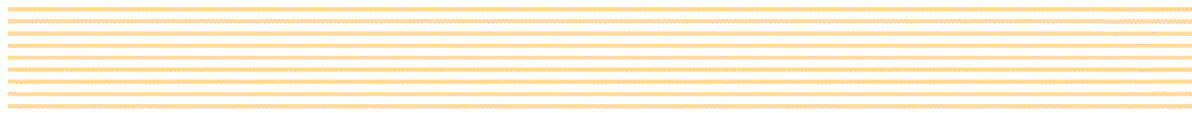
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| <p>The conditions were fulfilled on time.<br/>The Accreditation Commission confirms this with its decision of 27./28.05.2019.</p> |
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The following **recommendations** are given for further improvement of the programmes:

1. Learning outcomes on programme level should be published. They need to be checked against the learning outcomes on course level.
2. University of Ghana should develop a kind of transfer system which allows aligning the local credit system with the European Credit System (ECTS) which is based on student workload.

3. Access to data and information on the particular programme could be improved for both programmes, e.g. by providing it on the website of WACCI.
4. The network with stakeholders – other universities abroad as well as the private industry - should be widened. By this, funding opportunities for students could be broadened and conference attendance could be supported. Students could also be supported in organizing their own conference.
5. The university could support students in acquiring entrepreneurial skills, e.g. in drafting and handing in business plans and providing information on calls and opportunities.
6. The link of students to the private sector should be strengthened, e.g. via a mentoring system.
7. WACCI could improve the transparency of the achievements and grades of its graduates, e.g. by offering a Diploma Supplement.

With regard to the reasons for this decision the Accreditation Commission refers to the attached assessment report.



## **Experts' Report**

on the Master programme:

“Seed Science and Technology” (MPhil)

and on the PhD programme:

“Plant Breeding” (PhD)

offered by the University of Ghana, Ghana

Visit to the University: March 12-16, 2018

### **Panel of Experts:**

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| <b>Prof. Dr. Robert Hänsch</b>                                 | Technical University of Braunschweig, Faculty of Life Sciences, Germany |
| <b>Prof. Dr. Michael Kruse</b>                                 | University of Hohenheim, Faculty of Agricultural Science, Germany       |
| <b>Dr. Victor Afari-Sefa</b>                                   | World Vegetable Center, Benin (labour market representative)            |
| <b>Jorge Moreno Herrero</b>                                    | University of Mainz (student expert)                                    |
| <b>Coordinator:</b><br>Doris Herrmann,<br>Dr. Dorothee Groeger | AQAS, Cologne, Germany  |

## I. Preamble

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AQAS – Agency for Quality Assurance through Accreditation of Study Programmes – is an independent non-profit organisation, supported by more than 90 member institutions, both higher education institutions (HEIs) and academic associations. Since 2002, the agency has been accredited by the German Accreditation Council (GAC). It is therefore a notified body for accreditation of higher education institutions and programmes in Germany.

AQAS is a full member of ENQA and also listed in the European Quality Assurance Register for Higher Education (EQAR) which confirms that AQAS procedures comply with the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG), on which all Bologna countries agreed as a basis for internal and external quality assurance.

AQAS is an institution founded by and working for higher education institutions and academic associations. The agency is devoted to quality assurance and quality development of both academic studies and teaching in Higher Education Institutions. The activities of AQAS in accreditation are neither restrained to specific academic disciplines or degrees nor to a certain type of Higher Education Institution.

In recent years many higher education institutions and research institutes in the European Higher Education Area have set up **doctoral programmes (PhD programmes)** in order to boost the structured qualification of early stage researchers by providing support and guidance on a range of levels i.e. subject-specific, organisational, intellectual and/or financial.

## II. Accreditation procedure

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This report results from the external review of the Master programme in “Seed Science and Technology” and the PhD programme “Plant Breeding” offered by the West Africa Centre for Crop Improvement (WACCI), University of Ghana.

### 1. Criteria

The Master-programme is assessed against a set of **criteria for programme accreditation** developed by AQAS. The criteria are based on the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG) 2015. To facilitate the review each criterion features a set of indicators that can be used to demonstrate the fulfilment of the criteria. However, if individual indicators are not fulfilled, it does not automatically mean that a criterion is not met. The indicators need to be discussed in the context of the programme since not all indicators may necessarily be applicable to a specific programme.

The PhD programme is assessed against the AQAS **criteria for the accreditation of structured doctoral programmes**. The accreditation by AQAS is based on the following key concepts:

- The doctoral thesis is an independent, original academic piece of research. It can take the form of a monograph or a cumulative dissertation. The assessment of the originality is based on a set of criteria:
  - selection of the research topic,
  - formulation and development of questions around the research topic,
  - decision regarding the use of suitable methodological tools and methods,
  - the scientific research, and
  - the discussion and publication of research results.

- Doctoral programmes should foster subject-specific knowledge and, if possible, facilitate cross-disciplinary perspectives and inter-disciplinary exchanges.
- Doctoral programmes are carried out and completed within a specific timeframe.

The panel of experts was asked to assess both programmes on the basis of the relevant criteria and discuss the programmes separately, when needed.

## **2. Approach and methodology**

### *The initialisation*

The university mandated AQAS to perform the accreditation procedure in August 2017.

The university produced a Self Evaluation Report (SER), which describes both programmes (Master and PhD). In October 2017, the institution handed in a draft of the SER together with the relevant documentation of the study programme and an appendix.

The appendix included e.g.:

- Overview over statistical data of the student body (e.g. number of applications, beginners, students, graduates, student drop outs).
- CVs of the teaching staff, including research activities
- Information on student services
- Core information on labs and the main library
- Academic regulations for Master and PhD programmes.

AQAS checked the SER regarding completeness, comprehensibility and transparency. The final version of the SER was handed in January 2018.

The accreditation procedure was officially initiated by a decision of the AQAS Accreditation Commission 19-20 February, 2018.

### *The nomination of the panel of expert*

The composition of the panel of experts follows the stakeholder principle. Consequently, representatives from the respective discipline/s, the labour market and students are involved. Furthermore, AQAS follows principles for the selection of experts of the European Consortium for Accreditation (ECA).

The Accreditation Commission nominated in February 2018 the before mentioned expert panel. AQAS informed the university about the members of the expert panel and the university did not raise any concerns against the composition of the panel.

### *The preparation of the site visit*

Prior to the site visit, the experts reviewed the SER and submitted a short preliminary statement including open questions and potential needs for additional information. AQAS forwarded these preliminary statements to the University and the panel members in order to increase transparency in the process and the upcoming discussions during the site visit.

### *The site visit*

After a review of the Self Evaluation Report, a site visit to the university took place from 12-16 March, 2018. On site, the experts interviewed different stakeholders, e.g. the management of the University of Ghana, the management of WACCI, the programme management, teaching and other staff, representatives from the labour market as well as students and graduates, in separate discussions and reviewed additional documentation as well as sample student's work. The visit

concluded with the presentation of the preliminary findings by the group of experts to the university's representatives.

#### *The report writing*

Following the site visit, the expert group drafted the following report, assessing the fulfilment of the AQAS criteria for programme accreditation and doctoral programmes. The report included a recommendation to the Accreditation Commission. The report was sent to the university for comments.

#### *The decision*

The report, together with the comments of the department, forms the basis for the AQAS Accreditation Commission to make a decision regarding the accreditation of both programmes. Based on these two documents, on 14/15 May 2018 the Accreditation Commission took its decision on the accreditation. AQAS forwarded the decision to the university. The university had the right to appeal against the decision or any of the imposed conditions.

In June 2018, AQAS published the report and the result of the accreditation as well as the names of the panel of experts.

### **III. General Information on the University**

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#### **Status and Degree-awarding powers**

##### *Standard PhD programme:*

*The institution is entitled to award a doctorate.*

The University of Ghana was founded as the University College of the Gold Coast in 1948 and gained its current university status in the academic year 1960/61. It is the oldest of the 13 Ghanaian universities and tertiary institutions and has a current student population of 39,249 students (academic year 2016/17). The University of Ghana has a total of 1,150 faculty members who are engaged in research and teaching and ca. 200 administrative staff members.

As stated by the university, it has undergone several changes since the university invited a visitation panel in 2006 in order to refine processes, learning outcomes and its core mission. The changes were ratified in 2010 by an Act of Parliament. A new strategic plan (2014-2024) was developed and is being implemented according to the information in the SER. The plan includes, among others, the vision of the university to become a world class research-intensive university within the next decade.

Four priority areas for investment in research and development for innovation have been defined: Malaria Research, Trans-disciplinary Research into Climate Change Adaptation, Enhancing Food Production and Processing, Development Policy and Poverty Monitoring Evaluation.

The University of Ghana implemented a collegiate system in August 2014 and currently runs four colleges: Health Sciences, Basic and Applied Sciences, Humanities as well as Education. Different schools such as the School of Biomedical and Allied Health Sciences, the School of Agriculture, the West Africa Centre for Crop Improvement (WACCI) constitute these colleges.

The university offers Bachelor-, Master- and PhD-degrees. Currently, students can choose from over 230 postgraduate programmes. Master programmes may either have a duration of 12 months or 24 months. The duration of the PhD programme is 48 months.

The two programmes to be accredited are part of the College of Basic and Applied Sciences; they are embedded in the West Africa Centre for Crop Improvement (WACCI), which was established in June 2007 by the University of Ghana and Cornell University with initial external funding. As stated, WACCI's mission is to educate a prepared generation of plant breeders and seed scien-

tists for the up-coming agricultural transformation in Africa by offering high-quality research, teaching and learning.

Currently, WACCI runs the PhD programme in “Plant Breeding” (eight semester programme) and the Master programme in “Seed Science and Technology”. The PhD programme started in 2008, whereas the Master programme started in 2015.

### **Experts’ Evaluation**

The University of Ghana, as the oldest and largest public university in Ghana, exercises the right to award a doctorate. The West Africa Centre for Crop Improvement is a full-fledged institution of the University of Ghana with permanent staff employed by the university. Doctoral students are officially enrolled at the University of Ghana and receive counselling and support throughout their studies.

### **Conclusion**

The criterion is fulfilled.

## **IV. Assessment of the study programme(s)**

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### **1. Policy and Procedures for Quality Assurance**

#### Standards MA programme:

*The programme is subject to the Higher Education Institution’s policy and associated procedures for quality assurance, including procedures for the design, approval, monitoring, and revision of the programmes.*

*A quality-oriented culture, focusing on continuous quality enhancement, is in place. This includes regular feedback mechanisms involving both internal and external stakeholders.*

*The strategy, policies, and procedures have a formal status and are made available in published form to all those concerned. They also include roles for students and other stakeholders. [ESG 1.1]*

#### Standards PhD programme:

*The results of the internal quality assurance management are taken into account for the further development of the doctoral programme.*

### **Description**

As stated by the university, WACCI is a semi-autonomous institution within the University of Ghana and is part of the College of Basic and Applied Sciences. The running of the Centre is supervised by a Management committee, which consists of a Vice-Chancellor’s representative, Associate Directors, Coordinators, Associate Faculty members, student representatives and different external stakeholders and is chaired by the Director. There is also an Advisory Board appointed by the Vice Chancellor of the university to advise on the overall strategy of the Centre. Financially, the Centre has its own funds and operates a Finance Office under the supervision of the Director, but conforms to the general university structure with regard to the classification of income and expenses.

The quality assurance policy is stated in the university’s mission as part of the strategic plan 2014-2024 as well as in its Academic Quality Assurance Policy. One of the main objectives of the University of Ghana is the involvement of internal and external stakeholders. Therefore, an External Review Panel with external as well as internal members has been made up in 2015 to give recommendations regarding the development of the programmes, such as the elimination of duplicity in courses/modules or the introduction of specific course contents. In addition to this,

stakeholders such as research scientists, government agencies or representatives of private sectors come periodically together to discuss the prospects and challenges of the programmes.

Furthermore, and according to the SER, the university's quality assurance policy applies to all academic areas and aspects of the operations of the university and its units as well as its affiliate institutions. The quality assurance system of the university follows a strict procedure. Academic programmes are firstly approved by the Management Committee, then by the College Academic Quality Assurance Committee and the Board of the School of Graduate Studies before final approval is made by the College Academic Board, the Business and Executive Committee of the university and the Academic Board. It is also worth mentioning that all academic programmes go through national accreditation processes by the National Accreditation Board before introduction. Furthermore, the university outlines that it has benchmarked the curriculum of the programmes under consideration against programmes at various universities in Europe and the US.

The incorporation of teaching assessment as a criterion for the promotion of academic staff has been adopted via new guidelines in 2015. Teaching assessments are supervised by Teaching Assessment Committees. These committees share the teaching evaluation with the evaluated teachers, the Director of the Centre, the Dean and the Academic Quality Assurance Unit. Another main objective of the quality assurance process is student feedback, which is collected online at the end of every semester. According to the Self Evaluation Report, students give feedback on the outcome of the courses and the results of the evaluation reports are factored into the promotion of associated faculty.

In addition, the Alumni Association and the Career Development Research creates an interlinkage between graduated students, private sector representatives and the university in order to monitor study programmes. WACCI's alumni is regularly engaged in activities of the Centre. As highlighted by the university, a fruitful outcome of the alumni activities are the international workshops on Demand-Led-Varietal-Development, which permit students to gain experience and knowledge from alumni.

### **Experts' Evaluation**

Based on the evidence provided in the SER and on-site visit, either through the interviews or the documentation, the expert group is able to confirm that the expectations within the programmes' elements and the responsibilities are clearly defined. The different expectations of the programmes' elements that all stakeholders mentioned in the different interviews matched perfectly the competences and descriptions reflected in the course syllabi. Furthermore, curriculum documentation, such as course syllabi, is updated yearly if any changes are necessary and includes a full scope of different elements that are in harmony with the standards in the European higher education area in terms of course description, course elements, contact hours, learning outcomes formulated as competences, evaluation methods and grading and finally reference literature. There is a handbook specifically for both programmes that contains all regulations relevant to the specific programme. It includes also specific templates for home assignments and theses.

Although all this information is clearly defined and the students are aware of these different elements, there is a general lack of transparency and accessibility to all this information. The experts observed through the evaluation process of the documentation and during the interviews at the on-site visit that much of this information is not uploaded online and the information available for students is limited, even more so for prospective students applying for the two programmes that were evaluated. It was clearly evident during the visit that students receive all this information, especially during the beginning of the semester or also upon request, yet the expert group identified a clear need of further improvement for the accessibility of this information (**Finding 1**).



The experts can also positively evaluate the current quality assurance policies at the university, embedded as a fundamental task of the strategic plan of the university. Indeed, during the visit and especially during the different interviews with the management of the programmes, the staff of the School of Graduate Studies and rectorate of the university, it became clear to the experts that the university is establishing a solid basis for the further development of the QA system within the university. The panel of experts appreciates several positive aspects of the system that have already been successfully implemented, as for example the evaluation of the programmes and that the teaching staff is involved in the process as well as in the discussion of the results. Nevertheless, there are some aspects which are either missing or just at the rudimentary stages of implementation. There is only a partial implementation of feedback loops within the system. This means that although the evaluation of the teaching staff and modules is carried out with a very high student participation rate, WACCI gets very little information from the central QA system back in this case. The experts were positively impressed that WACCI elaborates a quality assurance report whereby several elements are analysed, and this is further submitted to the advisory board of the faculty so that it can be finally sent to the central QA system via its structures. Yet again the Centre in this case does not receive further feedback on it. What is more, teaching staff mostly hold informal discussions with the students at the end of the semester to evaluate all together the different elements which are likewise evaluated through the questionnaires on an anonymous level. This can be assessed as a positive action of the teaching staff in order to compensate for the lack of information that should be coming from the centralized feedback loop of the evaluations, especially because in all these processes the students do not receive any information from the evaluation processes and the quality assessment. This information can be vital for the further development of the programmes even when both have already excellent results. Thus the experts strongly encourage the university to further develop and implement clear and timely defined processes which always include feedback loops to all involved stakeholders (**Finding 2**).

During the different interviews and in the documentation, it was clearly evident to the experts that both students and labour market representatives are involved in development of the programmes and the QA system. Students are formally involved in the evaluation processes as well as members of the advisory board to the Centre. The labour market has some stakeholder representatives in the advisory board. Since students, specially from the Master's programme, are having external internships at different private companies, it would be interesting to have their supervisors involved in the evaluation of the programme to have a deeper look into the general skills and competences of the programme and with the option to further improve them.

The experts received the information in the SER and in the discussions during the site visit that the currently implemented QA system includes a local quality assurance committee at each faculty and a central one which is under the directorate for QA at the university, which directly reports to the university management. It would be beneficial for the university to provide a (graphic) overview of the different structural levels of the QA system which also includes information on which level the different stakeholders are involved.

The experts were told several times during the accreditation process that in 2014 a substantial QMS structural change took place at the university. Due to lack of reports and QA process associate documentation, the experts could not fully assess the outcomes of the quality processes that are derived from the evaluations done; it is thus difficult to estimate to which extent these indicators are involved in the planning of concrete measures to resolve conflicts or improve the quality of the system.

Finally, it was observed that informal elements are implemented to guarantee a follow-up of the alumni, especially catalysed by an alumni association which is directly in close contact with the Centre. Nevertheless, the experts would encourage the Centre to even have formal evaluation mechanisms such as online or email attachment questionnaires to alumni of both programmes,

where not only their further professional development is assessed but also the overall skills/competences, the entire programmes itself as well as the career progression (**Finding 3**).

## Conclusion

On the basis of the above assessment, the criterion is widely fulfilled. Information on the outcomes of the evaluation/quality assurance measures has to be provided regularly and transparently, e.g. feedback to students on the course evaluation in an aggregated form.

## 2. Quality of the Curriculum

### Standards MA programme:

*The intended learning outcomes of the programme are defined and available in published form. They reflect both academic and labour-market requirements and are up-to-date with relation to the relevant field. The design of the programme supports achievement of the intended learning outcomes.*

*The academic level of graduates corresponds to the requirements of the appropriate level of the European Qualifications Framework.*

*The curriculum's design is readily available and transparently formulated. [ESG1.2]*

### Standards PhD programme:

*The institution defines the aims of the doctoral programme.*

*The doctoral programme is aligned with the aims of the defined qualification.*

*The doctoral theses provide evidence that the appropriate level on the European Qualifications Framework (EQF) or the respective level on the national qualifications framework for the award of Higher Education degrees have been achieved.*

*Doctoral programmes are structured in such a way - with regards to the research content and the required time - that students are enabled to progress efficiently through all stages of their research and achieve their doctorate within an appropriate timescale.*

The **Master programme** in “**Seed Science and Technology**” follows an interdisciplinary approach and conveys knowledge and skills in seed development, production and storage, seed distribution systems in Africa, quality assurance in the seed industry as well as seed business management, as presented in the SER. The curriculum is designed to provide students with current seed science and technology instruction along with business management skills.

Generally, the programme consists of obligatory courses and elective courses. Master students undertake coursework in the first year and at least six weeks of experiential learning at private seed companies and national seed programmes, which is followed by a year of thesis research.

Regarding the Master programme “Seed Science and Technology”, students have to complete obligatory courses such as “Seed Biology and Production”, “Seed Health Management” and “Financial Management in the Seed Industry” and have to select at least two elective courses during their studies. Elective courses cover topics such as “Crop Improvement and Biotechnology” or “Micro Enterprise Development”. Students must obtain a total of 60-72 credits (Credit system of the University of Ghana) to be awarded with the Master of Philosophy (MPhil) in “Seed Science and Technology”. The credit system in Ghana allows programmes to offer different elective courses, so that depending on the credits provided for these courses the overall result of credits at the end of study can differ between the students.

The **PhD programme** in “**Plant Breeding**” is designed by WACCI to equip graduates with the relevant knowledge and skills for modern plant breeding. PhD students undertake coursework and modules on special topics in plant breeding and related areas at the University of Ghana in the first year of study. In the second year, students return to their (pre-selected) research institutions to conduct their field research for a period of three years. Students typically stem from national agricultural research systems but the university aims at recruiting students without these connections to be enrolled directly in the programme.

The programme is aimed at students from all over Africa. It starts off with a pre-research phase in which students undertake practical work and acquire research skills. The mandatory core courses cover topics such as “Statistics and Experimental Design”, “Population and Evolutionary Genetics” or “Genetic Improvement of Crop Plants”, whereas each year students also have to take elective courses. These can cover topics like “Plant-Microbe Biology”, “Environmental Stress Physiology”, “Plant Cell Tissue Culture” or “Plant Virology”. In addition to the requirement of passing all the courses, students must also pass a comprehensive examination at the end of their first year. In the third year, students are required to give a seminar on the progress of their research work which is assessed by a pre-assigned team of supervisors. Prior to the submission of their thesis, students deliver a seminar on the findings of the PhD research in their fourth year. Students must obtain a total of 75-81 credits to be awarded the Doctor of Philosophy (PhD) in Plant Breeding.

During the time at their home research institution, students have to hand in quarterly reports on the progression of their thesis work. Likewise, in-country supervisors hand in reports on their students biannually.

## **Experts' Evaluation**

### **Quality of the Curriculum of the Master programme “Seed Sciences and Technology”**

The topic of the Master programme fits very well to the goals of WACCI. Through the excellent combination of seed technology and seed business and management issues, the programme covers a well-chosen area that is scientifically up to date and has a high relevance and attractiveness for the labour market in West Africa, and by extension to the entire African continent. The combination of issues was recommended by the external expert panel visiting WACCI in 2015 and was supported by all stakeholder groups in the discussion with the experts during the site visit in a very convincing way.

Although the content of programme and the courses were well documented in the SER and presented during the site visit, the experts could not find a documented list of learning outcomes for the study programme as a whole. The instructors defined well-considered and documented learning outcomes on the course level that are provided to the students with the syllabus at the beginning of each semester. But there is no list of learning outcomes on the programme level. Here, the panel of experts identified the need for this to be clearly documented. Learning outcomes should be uploaded to the website of the programme since they will be highly attractive for potential applicants. This will further strengthen the marketing of the programme and will ultimately increase the number and quality of applications. After publishing the learning outcomes on the programme level, it needs to be checked that they are reflected in the learning outcomes of the individual courses (particularly the obligatory courses) (**Finding 4**).

The structure of the programme supports the goal of the programme. The combination of 2 semester course work and 2 semester thesis work helps students to learn the basics and to apply them in a practical research project. To include the writing and defense of the research proposal for the Master thesis as a separate seminar shows the high importance of practical scientific competence realised in the study programme. Supervision during thesis work is guaranteed re-

garding intensity and quality. The content of the courses and the Master theses documentation provided during the on-site visit provided evidence without any doubt that the programme corresponds to the Master-level as defined in the European Qualifications Framework.

As already mentioned above, a credit system based on workload is missing and should be developed (see above).

### **Conclusion**

On the basis of the above assessment, the criterion is partly fulfilled. Learning outcomes need to be developed on the programme level and published. They need to be checked against the learning outcomes on the course level.

### **Quality of the Curriculum of the PhD programme “Plant Breeding”**

The university has a long tradition and considerable experience in teaching students in natural sciences, e.g. Biology, Chemistry, and Medicine etc. and is ranked one of the best within all universities in Ghana and West Africa with regard to these fields. WACCI clearly defined the aims of the structured doctoral programme both in the written documents and within all discussions with the management of the university or the teaching staff. Questions that arose from the SER could be answered and clarified in the discussions during the site visit and important information given in response to the remarks of the experts (e.g. PhD-Theses, examples of written examinations, statistics etc.). The intended learning outcomes of the PhD programme exist. The experts could easily comprehend the profile of the study programme. PhD students underlined in the discussion that the main reasons of choosing WACCI for their PhD are the clearly defined aims and the structure of the programme. However, these learning outcomes of the modules and of the overall structured doctoral programme should be transparently published especially on the web-pages of WACCI and that of the university (Finding 4, see above).

The design of the programme evidently supports the achievement of the intended learning outcomes with respect to the substantial level of breeding competencies both in theory and in practice. The programme fits perfectly into the research agenda of the University of Ghana and is also consistent with the profile of the department with regards to teaching and learning. Equipment, laboratories, seminar and lecture rooms, library etc. fulfil the requirements for a successful realisation of the programme. The experts are deeply impressed by the new building of WACCI just next door. This building includes two lecture rooms for about 50 students each, two laboratories, growth and storage rooms, seminar rooms, a conference room and several offices and will be finalized in August 2018. These new facilities will improve the teaching and learning situation of the two study programmes very much.

The different categories are clearly specified, such as the average duration of doctoral studies, numbers of doctorates, numbers and types of publications, numbers and types of internal and external colloquia/conferences. The experts were impressed by the very convincing structure of the curriculum of the PhD programme: the students undertake lessons in the first of the four years at WACCI. In the next 2  $\frac{3}{4}$  years, students work on their research field hands-on in associated companies, research labs of the national agricultural system or international agricultural research centres (IARCs) such as IITA or ICRISAT or breeding stations (sometimes in different countries). Students return to the WACCI campus in the last three months to finalize the writing of their thesis and prepare for the disputation.

Within these three years of the PhD programme, students are supported by their supervisor in the lab as well as by the supervisor from WACCI. Besides electronic or Skype communication, the supervisor from WACCI will visit the students at least two times each year in their research lab, no matter in which country they are seated.

The curriculum for the first year at WACCI is clearly structured: Students undertake coursework and advanced modules on special topics in plant breeding and related subjects. The credits are calculated on basis of contact hours of the lecturer - usually 1 credit for 1 teaching hour or 1 credit for 3 hrs of practical course. This practice of the university is in line with the national regulations in Ghana. The students clearly stated: The curriculum is densely packed with modules, however, the workload is manageable. It would be great to improve the development of the students if they can go abroad for (1) attending international conferences and (2) for working in important research labs **(Finding 5)**.

The doctoral graduates have a systematic understanding of their research discipline and are able to master skills and methods which are used in their research field. The students are able to identify and to solve new problems in the areas of research. Using all the possibilities of a fully equipped library, including online access to all the publications needed, the doctoral students can acquire a comprehensive knowledge of the relevant literature. This could easily be proven by the experts screening publications of the PhD-students and evaluating the high level of several PhD-theses. The PhD programme allows doctoral students to identify scientific questions of research on their own and this process starts early in the first months (or even before) of the 4-year programme. In the discussions with the supervisors and teaching staff the experts were informed that the PhD-students carry out critical analysis and develop new and complex ideas with respect to their scientific projects and to social-cultural aspects in an academic or non-academic professional context. The PhD programme also offers opportunities to participate in national and international conferences. Therefore, doctoral students can present concepts in front of an academic audience and have the possibility to discuss research findings of their areas of expertise with (international) academic colleagues.

The success of the programme is outstanding. Almost 100% of the students received their final degree and in the last year there have only been two drop-outs (for personal reasons). Moreover, 100% of the graduates will find a job – mostly in the lab of the former PhD-thesis. Especially for women this programme is very attractive because it offers them the opportunity to spend time in their home country and to stay with their family. The students like the diversity of approaches and for them it is an attractive profile of the programme to focus with their research on important problems of the African continent.

### **Conclusion**

On the basis of the above assessment, the criterion is fulfilled, but the overall targets of the programme should be published on the website of WACCI and of the university.

### **3. Learning, Teaching and Assessment of Students**

Standards MA programme:

*The delivery of material encourages students to take an active role in the learning process. Students are assessed using accessible criteria, regulations, and procedures, which are made readily available to all participants and which are applied consistently. Assessment procedures are designed to measure the achievement of the intended learning outcomes. [ESG 1.3]*

## **Description**

### Learning, Teaching

As outlined by the university, teaching at WACCI is based on a student-centred approach. It is content-oriented and makes use of modern pedagogy based on the programme's learning outcomes. Course outline and materials to guide the student's preparation are handed out by the instructor at the beginning of the semester. The components of the courses differ from discussion topics over presentations to independent study on relevant topics. The main teaching methods are distinguished between theoretical and practical taught courses and can be formal lectures, seminar presentations or assigned readings and combinations thereof.

### Assessment

The University of Ghana allows for a certain flexibility in the choice of assessment. Rules for the organization of examinations are defined and published in the student handbook. The instructors inform the students of the mode of examination at the beginning of the semester. Three credit courses take a maximum of three hours to complete if it is a sit-in examination whereas term papers or take-home assignments are submitted on determined timelines by the instructors. An academic calendar is published online in order to present the schedule of examinations and is available to students and faculty before the beginning of the academic year. Opportunities to re-sit an exam are provided, as outlined by the university.

Thesis examination as a key component of student's assessment is conducted by external and internal examiners at both the Master and PhD levels. The requirement for external examiners is to have a senior lecture or senior research fellow status. An oral defense in the Master programme will be carried out internally by a committee whilst the PhD oral defense will be examined at an open forum at the School of Graduate Studies with at least one external examiner.

All types of examinations are regulated by guidelines of the University of Ghana.

## **Experts' Evaluation on both programmes**

WACCI has excellent laboratory facilities to enhance teaching and learning. Lectures for the two programmes offered by the Centre are delivered via a combination of diverse teaching methods to enhance learning. The combination of cross-faculty from the University of Ghana, two internationally recruited full-time staff at the Centre and a diverse pool of world class experts in Seed Science and Plant Breeding ensures that students are equipped with contemporary knowledge in the various courses undertaken at the Centre. Consequently, the documentation reviewed by the panel of experts including examination questions and site interviews with students showed that learning outcomes and student evaluation are consistent with the content of the curriculum.

A Masters and PhD student handbook are publicly available for both Master and PhD programmes; it details out guidelines for student teaching, assessment and requirements for graduation. The combination of diverse teaching and learning methods including group, individual assignments and seminar presentations and student attachments/ field study allows for participatory and discovery learning approaches by students. Officially, every graduate student at WACCI is assigned at least 2 hours per week by his/her main supervisor. This allows for close interaction and quality student supervision. The provision of Anglophone and Francophone student coordinators for advise on both academic and administrative matters continues to attract Francophone students to the programmes and is indeed truly innovative for an Anglophone West African country such as Ghana. Also the PhD programme is attractive to married women who can typically not commit 3-4 years of on-site study in other than their home universities, not forgetting the special support and/or facilities given to pregnant women whiles on campus to assist them in their studies.

Lecturers provide course outlines with learning outcomes at the beginning of each semester that also include the assessment criteria for each course in a transparent manner. There are sometimes even opportunities for students to discuss the assessment criteria with their lecturers based on the feedback received from the site interviews. Both mid-semester and end of semester examination dates are announced at the beginning of each semester and this is well known to all students. Given the strict adherence to course completion timelines as per donor funding guidelines, students are required to work within fairly strict time schedules (2 years for the MSc. and 4 years for the PhD), albeit with room for accommodating individual circumstances such as illness, absence with permission and other mitigating circumstances that may affect some students, as a result which postponement of a student's examination may be deemed necessary. The Centre's management solicits feedback on both programme and lecturer's performance from students, alumni and other stakeholders and use this to make improvements over time. The student feedback leads to consequences, e.g. in continued engagement of existing teaching staff or contracting new teaching staff. The grading system is based on the standard grading system of the university as stipulated by the School of Graduate Studies and is documented in the postgraduate student handbook.

Modules are delivered by seasoned world class professionals who come to share their practical experiences. WACCI's success is to a large extent based on this innovative aspect of the programme. However, the contributions of such "visiting faculty" does not seem to be adequately acknowledged publicly by capturing and including it in the information about the programme. It would be recommendable to address it at the Centre's website which could also motivate such world class professionals and encourage their continued patronage of the programme.

In addition, the overall concept of the programme is very convincing. The research projects carried out by PhD students abroad while they are still participating in the WACCI programme is a good mechanism of "keeping students at home while abroad". This practice needs to continue but pushing the frontiers of science, which is very much needed, requires "cutting edge research". This can only be done in few places, such as the regional Centres of excellence or IARCs and - with special arrangements - at selected private companies with research competence. Some new cooperation contracts and strengthened collaborations could thus be very helpful to attract students from the African continent as well as from abroad on one hand and to contribute to a pool of regional and international scientists on the other hand (**Finding 5**). During the site visit some students told the panel of experts that they are highly satisfied with their studies at WACCI but that they receive feedback on their Master thesis relatively late. The experts are well aware that the Master programme in "Seed Science and Technology" is just about two years old and time is needed to build a pool of committed external examiners. However, the university has to take measures to limit the time period for thesis review (**Finding 6**).

## **Conclusion**

On the basis of the above assessment, the criterion is widely fulfilled. The university has to draft measures to limit the time period for thesis review in the Master programme.

#### 4. Student Admission, Progression, Recognition and Certification

##### Standards MA programme:

*Consistently applied, pre-defined, published regulations are in place which cover student admission, progression, recognition, and certification.*

*[ESG 1.4]*

##### Standards PhD programme:

*The relevant formal criteria such as admission requirements and procedures, examination conditions and the award of the degree are described and have been published.*

#### **Description**

##### Admission to the study programme

Admission criteria and procedures are regulated by the Admissions Requirements and Regulations for Master's and Doctoral Programmes policies of the university. Prospective Master students must have obtained a good first degree which has to be at least a second-class lower division in Agriculture, Botany or a related field from a recognized university. In addition, to this requirement, PhD applicants need a research master's degree in Crop Sciences or a related field to be admitted to the programme. Both admission processes are regulated by regulations for Master's and Doctoral programmes of the University of Ghana. Prospective Master students as well as PhD candidates have to hand in applications during the call for applications period, which are held several times during the year, since the programme enrolls in August whilst the PhD programme enrolls in January. The final selection is made by the members of the Admissions Committee, which is chaired by the Associate Director in charge of Academic and Students Affairs. The admission process considers gender and targets an equal ratio of gender. Knowledge and skills gained outside of the university can affect the admission positively and is regulated by the Graduate Students Handbook. In total, about 41-66 Master and 35-120 PhD applications are received each year.

The university charges tuition fees. Since its inception in 2015, WACCI has enrolled 36 students in the Master programme and since 2007 114 students in the PhD programme.

##### Progression

As outlined by the university, private public partnerships have become a key strategy at the university and an Institute for Applied Science and Technology has been created. To foster this relationship, workshops and seed funding for research and product development with seed and agro-input dealers, especially, agro-chemical companies has become a result of this key strategy.

Having in mind that this programme also attracts francophone students due to its importance in African francophone sub-regions, the university offers English language proficiency courses in the first year of studies.

##### Credit System, Recognition and Certification

WACCI uses a local credit system based on the hours spent and the type of teaching method and learning outcomes delivered: three hours of lectures per week are equivalent to three credits; two- to three-hour practical courses are equivalent to one credit; six hours of field work comprise one credit.

Students receive a certificate upon successful completion of their studies, according to the university requirements.



## **Experts' Evaluation on both programmes**

The formal minimum requirements for admission are described in the documentation as well as on the WACCI website. They are appropriate for the specific Master and PhD programmes and support their objectives. In particular, the possibility to apply from Francophone countries in West Africa is to be mentioned. Specific advanced lectures for English language proficiency are an excellent structural element to overcome the two-language divide in West Africa.

Although the admission requirements are well described, the selection criteria for short listing of applicants are not documented. In which way the various criteria (Bachelor GPA, motivation letter, references etc.) are weighed in the selection process is not documented. It is not transparent for prospective applicants what the relevant selection criteria are, except for the minimum requirement conditions provided at the website (see **Finding 1**). In the PhD programme, applicants have to submit a research proposal for their thesis work as part of the selection criteria. Of course it must be guaranteed during the admission process that the accepted applicants are well distributed to the supervisors, i.e. the faculty member with required expertise are available either at WACCI or other university cross-faculty. Here, it might be good to indicate in the call of the programme how many positions are available in which discipline. This will give the applicants more transparency about the chances to be admitted for a specific research topic. There were no consistent documents on qualitative and quantitative data on the admission procedures of past cohorts made available to the panel of experts.

Another element that is important to address is that the university does not have an implemented tool to evaluate the student's workload. The credit system in Ghana is strictly based on contact hours and does not contemplate any assignment of credits for the self-learning time, thus making it difficult to compare this system with the European approach. Yet, interestingly, through the documentation, the experts observed that one of the items that is evaluated by the national accreditation board in Ghana does contemplate the evaluation of workload of the students for both the Master and the PhD programme. Even though the experts were positively convinced by the students that for both programmes the regular workload is within limits and that it is manageable to study it in the time given, it would be necessary to have a tool that allows determining the workload of the students in both programmes. To align the credit system of Ghana and Europe – also for the benefit of student mobility – it is recommended to implement a conversion point between both systems (**Finding 7**).

Regulations for recognition of Higher Education Qualifications and previous periods of study are in place. These regulations are documented in the examination regulations which are available to students. The recognition of prior learning (e.g. of vocational level) is not possible in Ghana at the moment due to national regulations.

Learning agreements are not used as it is very seldom that students want to go abroad for course work. For mobility for internships and thesis work, contracts are made between WACCI and the partners in which the recognition of the work done abroad is regulated.

Graduates do not receive a diploma supplement or other documentation explaining the qualification. The programme directors explained that this type of document is not issued and requested by the University of Ghana and also not in the whole West Africa area. WACCI itself has no power to issue such a document without the allowance of the university or the ministry (see Chapter 7).

## **Conclusion**

On the basis of the above assessment, the criterion is partly fulfilled. Remediation is required in the following areas: a) The criteria and their weights in the selection process must be documented and must be made available to the applicants, e.g. via the WACCI homepage, b) The University

of Ghana has to develop a kind of transfer system which allows aligning the national credit system with the European Credit System (ECTS) which is based on student workload.

## 5. Teaching Staff

### Standards MA programme:

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

*Staff involved with teaching is qualified and competent to do so.*

*Transparent procedures are in place for the recruitment and development of the staff. [ESG 1.5]*

### Standards PhD programme:

*The qualification of supervisory staff (m/f) is appropriate to ensure that doctoral students are supervised at the correct academic level.*

*The personnel are sufficient in number to safeguard supervision arrangements on the doctoral programme.*

*The remit of supervisors is clear and transparent.*

## **Description**

Full-time staff at WACCI currently comprises five full professors, two associate professors, four senior lecturers and nine lecturers, according to the university. Part-time faculty covers teaching as well. Recruitment procedures are fixed and decisions about recruitment are made by the College Appointments and Promotions Committee based on recommendations by the School Management Committee and Department. Opportunities for professional development of staff are defined in policy guidelines on staff development. Newly recruited staff, for example, will receive orientation including teaching methods at the Education department.

Due to the worldwide network of WACCI, teaching staff are complemented by guest lecturers from world class experts who are invited on a regular basis, as outlined in the SER. The university supports its faculty in their research with the creation of an Office of Research Innovation and Development, which helps in providing external funding.

## **Experts' Evaluation for both programmes**

The experts positively recognize that there is a clear scheme of supervision of the students in place and tasks of supervisors are well defined. It became obvious that the supervisors generally practice an "open door policy". This approach facilitates and encourages the exchange of information between supervisors with the students. Coordination activities are well defined and due to the clear intake procedure major coordination happens in the very early stages of the programmes. The personal communication is supported by a clear and accessible website providing key information on the programmes, their structures and requirements. In the discussions during the site visit the Master and doctoral students explained that the communication between them and the supervisor takes place via email in cases where students or supervisors are not directly available. No problems were mentioned. Within the 3 year working period for the PhD-students in the research lab, the students will be supported by their supervisor in this lab (in their home country) as well as by the supervisor from WACCI. Besides the electronic communication, the supervisor from WACCI visits the students at least two times a year in their research lab.

Regarding the academic level of the supervisors the panel of expert is impressed by the staff portfolio. All human resources involved in teaching within the programmes are documented, including their academic and other relevant qualifications as well as quantitative involvement

(teaching hours) in the programmes. WACCI has developed self-assessment strategies for their members to further ensure their high academic standards. The academic supervisors have in-depth subject-specific knowledge on their disposal which is proven by publications in peer-reviewed journals. A practice that seems established is to have “young” scientists which can participate in the mentoring of undergraduates. Some members of WACCI have also done internships overseas giving them the possibility to experience how supervision is done abroad. The experts believe this is a good practice and encourage further developing this exchange.

Usually professors teach 2 to 3 courses per semester with 9 hours per week of teaching, co-teaching takes place quite often. WACCI started its PhD programme in cooperation with Cornell University and therefore also used the human resources from this university. Now, a considerable number of teaching staff at WACCI is recruited from other colleges/faculties and external institutions based on need. For these associate lecturers involved in the programmes there are procedures established to ensure they meet required criteria for teaching in WACCI’s programmes. The administration is not too overburden. The director of WACCI still has time to focus on strategic development plus teaching and research.

The university provides courses in “good teaching practices” for the teaching staff. New lecturers at university have to undergo several trainings. In this way, procedures are in place to ensure and to develop appropriate didactic qualifications of the teaching staff.

## Conclusion

On the basis of the above assessment, the criterion is fulfilled.

## 6. Learning Resources and Student Support

### Standards MA programme:

*Appropriate facilities and resources are available for learning and teaching activities.*

*Guidance and support is available for students to advise on achieving successful completion of their studies.*

[ESG 1.6]

### Standards PhD programme:

*There is a research environment in place which facilitates the relevant research and fosters the qualification which is necessary for a future research career inside academia or outside an academic context.*

*Doctoral students have access to access to an appropriate infrastructure.*

*Sufficient and suitable guidance and supervisory systems are in place.*

## Description

WACCI is located on the main campus of the University of Ghana, Legon, Accra. As outlined by the university, the Centre offers lecture rooms, a library, a conference room with video conferencing as well as office for faculty and staff. The Centre operates a model farm and is currently expanding its laboratories through a new facility.

Learning material is provided by the Library System of the University of Ghana, which consists of various library branches in different Schools. It contains both electronic and print resources. Students of the programme under consideration have access to various libraries at partner institutions, such as Cornell University.

Accommodation is provided on campus for students. Students furthermore receive health insurance and information on living conditions and the working environment. The university's Career and Counselling Centre provides guidance where necessary, both academically as well as personally, also to international students. They are also supported by the International Programmes Office which offers support to international scholar as well, such as orientation programmes.

Academic advisors are assigned in every department and offer counselling hours. Tutors are available in the halls of residences.

The University of Ghana runs an Office for Students with Special Needs to cater for students with disabilities or specific social backgrounds. Day-care services for students with children are offered on campus.

### **Experts' Evaluation for both programmes**

WACCI has grown from a single donor funded to a multiple donor funded Centre over the past 10 years since its establishment. The majority of students come from diverse Sub-Saharan Africa countries with varied background and, therefore, study on full scholarships awarded by donor agencies to WACCI. The University of Ghana has an International Programmes Office that supports international students in both academic and administrative matters.

The Centre has an excellent set-up to ensure quality teaching and learning. New students receive orientation during the first few weeks. In addition, students from Francophone Africa are given the opportunity to improve their English proficiency through courses as needed in the course of the first year of their programme. All students receive course outlines at the beginning of each semester with relevant reference materials. The university's main and departmental libraries as well as access to peer reviewed journals from Cornell University and AGORA are a good morale booster as this is otherwise a big challenge for most postgraduate students from most developing countries. Also the blended set-up for student support involving academic counsellors and advisors, English language support services for Francophone students and subject matter specialists for thesis supervision is available to students.

In addition, students receive practical hands-on technical training in breeding at the university farm and during internships with private companies and national seed labs (in "Seed Science and Technology") and national agricultural systems and IARCs (for "Plant Breeding"). This is highly commendable. The Centre is encouraged to foster collaborative partnerships with private sector and IARCs to increase its attractiveness to students within the entire Sub-Saharan Africa and other continents.

Academic counsellors are available to coordinate the courses offered at both content organizational levels to avoid overlap. Indeed, it was confirmed during the on-site discussions that the Centre had to undertake a review of the courses taken by previous cohorts and eliminate duplicate modules or parts thereof from some courses.

The Career Centre of the university should support students of the Master of "Seed Science and Technology" programme in acquiring hands-on entrepreneurial skills, e.g. in drafting and handing in business plans and providing information on calls and opportunities for individual or joint business set-up (**Finding 8**).

The panel of experts noted during the site visit that the infrastructure of WACCI needs expansion to accommodate increased student numbers in terms of computer labs, study sitting rooms and lecture halls. The Centre had already started the construction of a state-of-the-art multipurpose building with a seed science and technology laboratory, a tissue culture laboratory, a bioinformatics laboratory, two lecture rooms and a conference room to accommodate the anticipated expansion that has resulted since the start of the programme. Laboratory equipment's for the new facili-

ty has already been procured and re-location is already anticipated in August 2018. This will provide adequate space for more efficient teaching and learning.

The current set up at WACCI does not necessarily allow for attracting exchange students from outside Africa but this can easily be accommodated.

## Conclusion

On the basis of the above assessment, the criterion is fulfilled.

## 7. Information

### Standards MA programme:

*Data is collected from relevant sources and stakeholders, analysed, and used for the effective management and continuous enhancement of the programme. [ESG 1.7]*

*Impartial and objective, up-to-date information regarding the programme and its qualifications is published regularly. This published information is appropriate for and available to relevant stakeholders. [ESG 1.8]*

### Description

In its Self Evaluation Report, WACCI outlines several stakeholders of the programme from which feedback is collected: governments, industry donors, national agriculture research systems as well as regulatory institutions. Feedback is provided in the form of review recommendations, workshops or survey reports. External supervisor provides evaluation reports on students.

Additionally, WACCI reports about close contacts to alumni. Most students come from national agricultural research systems and continue their work after finishing their studies at WACCI, according to the university.

The university gathers feedback from students via the course evaluations and the student representation in committees, such as the Management Committee.

Course descriptions shall be available on the WACCI website.

### Experts' Evaluation

Regarding the data management for both programmes, the experts have previously stated the lack of formal mechanism that permits a follow-up of the graduates for both programmes. Nonetheless, informal elements are implemented that allow the Centre to evaluate the professional development of several alumni. The experts would like to recommend establishing formal mechanisms that enable the assessment of these elements.

The close contact and fluid communication of the Centre with external partners, such as private sector and research institutions of the field, allow the Centre to observe the harmonization of the programmes' outcomes and the requirements for successful employability of the graduates. For further improvement, the experts would suggest the establishment of a stronger link of the students to the private sector. During the discussions at the site visit, several concepts were raised by both the labour market and the students group, among them, mentoring programmes seemed to be very interesting for both groups (**Finding 9**).

While formal requirements of the programmes are clearly stated and are accessible for students, such as scholarships, tuition fees, time schedules and regulations, there is a lack of accessibility of information to different stakeholders. Students receive course descriptions once a semester

has started, but the experts could not find a general description of the learning outcomes of the programme on an overall level. This description could be of high interest for future applicants of both programmes. Furthermore, the experts would encourage the Centre to upload all relevant information of the programmes, including course syllabi, to its website. This would not only improve transparency with the community, but would also improve the accessibility for students and future applicants. During the site visit the students mentioned several times that this type of information would be very helpful for future students, specifically during the application process, but it would also support them in the election process of elective courses. All this information should be granted to students prior to the beginning of the semester.

As mentioned previously, the transparency of the application process should be improved and students should be informed on the website about the selection criteria.

Students receive a Transcript of Records - a short supplementary explanatory note which includes a description of mandatory and elective course, grading system and overall information. However, some elements which are usually incorporated in a standard Diploma Supplement as pertains elsewhere, such as in Europe, are missing: there is no indication of the level of the programme according to any framework like ISCED or EQF, there is no general description of the programmes themselves or higher education system in Ghana, no information on the language of the programmes, etc. In order to have a better transparency of the programmes for students, potential cooperation partners or future employers, WACCI should provide a considerable amount of already existing information of its programmes in one certification document describing the competences, duration, plus additional explanation of key aspects of the programmes such as credit system, duration and language of instruction as well as the proper classification of the programme according to ISCED or EQF. Therefore, the experts would recommend that WACCI provides the general information about the qualification on its website (**Finding 10**).

Besides the above mentioned aspects, students have a proper access to very important information, especially regarding the regulations of the programmes, duration, requirements for passing and completion of the programme.

## Conclusion

On the basis of the above assessment, the criterion is fulfilled. The transparency of the achievements and grades the graduates gained should be improved, however.

## V. Recommendations of the panel of experts

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The panel of experts recommends

to accredit with conditions

- the Master programme “**Seed Science and Technology**” and
- the PhD programme “**Plant Breeding**”

offered by **the University of Ghana**.

Findings:

1. Access to data and information on the programme should be improved for both programmes, e.g. by providing it online. The admission criteria of both programmes have to be made transparent, especially with regard to the weighting of different criteria in the selection process.

2. Information on the outcomes of the evaluation/quality assurance measures has to be provided regularly and transparently, e.g. feedback to students on the course evaluation in an aggregated form.
3. WACCI should use online or email attachment questionnaires to alumni of both programmes, where the entire programmes are assessed as well as the career progression.
4. Learning outcomes on the programme level have to be published. They need to be checked against the learning outcomes on the course level.
5. The network with stakeholders – other universities abroad as well as private industry - should be widened. By this, funding opportunities for students could be broadened and conference attendance could be supported. Students could also be supported in organizing their own conference.
6. The university has to draft measures to limit the time period for thesis review in the Master programme.
7. The University of Ghana has to develop a kind of transfer system which allows aligning the local credit system with the European Credit System (ECTS) which is based on student workload.
8. The university should support students in acquiring entrepreneurial skills, e.g. in drafting and handing in business plans and providing information on calls and opportunities.
9. The link of students to the private sector should be strengthened, e.g. via a mentoring system.
10. WACCI should improve the transparency of the achievements and grades of its graduates, e.g. by offering a Diploma Supplement.