

## **Accreditation Report**

Accreditation at the

### **Albert-Ludwigs-University of Freiburg "Biomedical Sciences" (M.Sc.)**

#### **I Procedure**

**Date of Contract:** 24 April 2017

**Receipt of self-evaluation report:** 2 May 2017

**Date of the on-site visit:** 13-14 July 2017

**Standing Expert Committee:** Standing expert committee "Mathematics and Natural Sciences", standing expert committee "Medicine and Health Sciences"

**Attendance by the ACQUIN Office:** Dr. Anne-Kristin Borszik

**Decisions of the Accreditation Commission:** 26 September 2017, 25 September 2018

#### **Members of the expert group:**

- **Prof. Dr. Manfred Gessler**, Chair of Developmental Biochemistry, Theodor-Boveri-Institut, University of Würzburg
- **Prof. Dr. Christian Griesinger**, Coordinator of the PhD programme „Molecular Biosciences and Biomedicine“ (Cooperation with the Universidad Nacional de Rosario, Argentina), Director of the Department NMR-based Structural Biology, Max-Planck-Institut for Biophysical Chemistry, Göttingen
- **Prof. Dr. Stephan Klein**, Coordinator of the international study programme "Biomedical Engineering" (M.Sc.), project manager of the Medical Sensors and Devices Laboratory, University of Applied Sciences Lübeck
- **Jorge Moreno**, student of the study programme „Biomedizin“ (M.Sc.), Johannes-Gutenberg-University Mainz
- **Dr. Carsten Roller**, head of the Department „Education and Career“ of the 'Verband Biologie, Biowissenschaften und Biomedizin in Deutschland e.V. – VBIO', Munich

The **Evaluation Report** of the expert group is based on the self-evaluation report of the HEI and extensive discussions with the heads of the study programmes, staff representatives, students, alumni and employers.

Evaluation Criteria have been the “Standards and Guidelines for Quality Assurance in the European Higher Education Area” (ESG) in the actual official version. Evaluation Criteria have been the “Rules for the Accreditation of Study Programmes and for System Accreditation” of the German Accreditation Council in the actual official version. At the same time the national context, particularly the national rules regulating the establishment of study programmes, has been taken into account.

## **II Introduction**

### **1 Short profiles of the Albert-Ludwigs-University of Freiburg and the University of Buenos Aires**

The University of Buenos Aires (UBA) was founded in 1821 and is now the second biggest University of Argentina. It comprises the 13 Faculties of Agronomy, Architecture, Design and Urbanism, Economic Sciences, Natural Sciences, Social Sciences, Veterinary Medicine, Law, Pharmacy and Biochemistry, Philosophy and Humanities, Engineering Sciences, Medicine, Dentistry, and Psychology as well as 61 scientific institutes mainly associated with the University's faculties. Currently, more than 28,000 employees are engaged in the field of teaching and learning and around 250,000 students are enrolled at the University of Buenos Aires.

The Albert-Ludwigs-University of Freiburg (ALU) was founded in 1457 as a classical full university with eleven faculties – the Theological Faculty, the Faculty of Law, the Faculty of Economics and Behavioural Sciences, the Faculty of Medicine, the Philological Faculty, the Philosophical Faculty, the Faculty of Mathematics and Physics, the Faculty of Chemistry and Pharmacy, the Faculty of Biology, the Faculty of Environment and Natural Resources and the Faculty of Engineering. Besides this, a multitude of scientific centres are associated with the University. Around 25,000 students – 17% of whom come from more than 100 nations – are currently enrolled in the University's 196 study programmes. Almost 5,000 professors and research assistants are engaged in research and teaching. In addition, 2,000 members of non-academic staff are employed at the University.

### **2 Brief information on the study programme**

The fee-based further education programme "Biomedical Sciences" (M.Sc.), that requires post-graduate work experience for admission, is taught entirely in English. It was originally developed in cooperation with the Faculty of Medicine at ALU as a full-time study programme at the UBA, Faculty of Pharmacy and Biochemistry and Faculty of Medicine, where it has been established in 2008. Although established as a collaborative programme between the UBA and the ALU, the students completed the study programme only with a master's degree awarded by the UBA. This programme has already been successfully accredited by CONEAU (Comisión Nacional de Evaluación y Acreditación Universitaria), the Argentinian National Commission of Higher Education Evaluation and Accreditation.

Now the study programme has been further developed as a double degree programme between the UBA and the ALU. This study programme, that is now to be evaluated, comprises 120 ECTS credits within a regular study period of four semesters. It shall be introduced in the winter term 2017/ 2018. Annually, 20 students will be admitted to the programme. Tuition fees amount to 12,000 Euro per student for the whole programme.

### **III Evaluation**

#### **1 Objectives of the study programme**

##### **1.1 Overall strategy of the University and the Faculty**

The ALU considers itself to be one of the few genuine full universities in Europe, whose mission it is to promote the interdisciplinary cooperation of the different scientific disciplines in research and teaching. In the field of life sciences this has been realised, for instance, by the establishment of the Spemann Doctoral School for Biology and Medicine (SGBM). The Faculty of Medicine uses the broad range of courses at the ALU for interdisciplinary cooperation in research and teaching and is committed to its social responsibility.

The ALU offers a large number of internationally oriented, especially English-language and bi- and trilingual courses. In May 2017, the administrative department Freiburg Academy for University postgraduate training (FRAUW) was transformed into a central facility called Freiburg Academy. In addition to the scientific advanced training, the scope of tasks includes further training for ALU employees. One of the goals of the Freiburg Academy is to position the ALU as one of the leading German Universities offering (online) advanced training courses that can also be studied part-time.

The ALU's further education, extra-occupational training courses developed over the past few years already include, for example, international online master courses in the fields of medicine (periodontology and implant therapy, palliative care, global urban health, technical medicine) as well as numerous module programmes and refresher courses, further education courses and additional training courses. The Freiburg Academy supports these master programmes and the refresher courses in terms of general marketing and external representation as well as with regard to administrative issues and central networking.

The study programme "Biomedical Sciences" (M.Sc.) was developed from a successful German-Argentinian programme with a master's degree awarded by UBA, referred to as "International Master Program in Biomedical Sciences" (IMBS). The IMBS was founded by Professor Dr. Alberto Boveris, Dean of the Faculty of Pharmacy and Biochemistry at the University of Buenos Aires, who received in 2014 the Cross of the Order of Merit of the Federal Republic of Germany by the President of the Federal Republic for his significant contribution for the consolidation of the bilateral relations between Argentina and Germany. More than 80 students from around 50 nations (two thirds of them from developing countries) have already graduated from the master's programme based at UBA with a drop out rate of only 3%. 75% of the graduates have initiated PhD projects and 25% have commenced their professional careers in biomedical branches of the industry, in public relations or at publishing companies.

The already existing Diploma of Advanced Studies (DAS) “Biomedical Sciences” is one of the further education programmes offered as a presence course with an international target group at ALU. The study programme under review is, regarding content, mainly based on the running master’s programme “Biomedical Sciences” under the responsibility of UBA, and also on the DAS. It extends both programmes, adopting Bologna regulations. Awarding a German (as well as Argentinian) master’s (double) degree, this study programme is expected to further improve graduates’ career options at a global level as biomedical sciences are among the globally growing scientific fields. The conception of the study programme was also based on the experiences with other already accredited (international) master programmes at ALU in the fields of biomedical sciences.

The master programme under review shall strengthen the course offer in the fields of biomedicine and further education courses; at the same time it is a novelty for the Faculty and for the entire ALU as it is 1) the first course offered by the Faculty of Medicine where a double degree is awarded; 2) the first further education course offered by the Faculty of Medicine entirely taught as a presence study course and constituted by modules offered equally in Freiburg and Buenos Aires respectively; 3) the first further education course of the ALU in collaboration with a Latin American University; 4) a study programme integrating subjects of the consecutive master programme “Molecular Medicine” (M.Sc.) but being open to students from all areas of life and natural sciences and building on their professional experiences in order to further qualify them in human-relevant, biomedical subjects; 5) an interdisciplinary course designed to tackle the growing challenges of research and health care such as big data handling, genome sequencing, gene editing, bioethical issues, and intercultural differences by offering a comprehensive, solid biomedical training at a global level.

The study programme was developed by professors of various disciplines (medicine, pharmacy, biochemistry, engineering sciences and theology) under the umbrella of the Faculty of Medicine at ALU and the Faculty of Medicine as well as the Faculty of Pharmacy and Biochemistry at UBA. Collaborations related to teaching in the programme have also been established with the University of Furtwangen, Faculty of Medical Life Sciences, and the Thales Academy for Economics and Philosophy.

The expert group considers the study programme to be well integrated into the overall strategy of the Albert-Ludwigs-University of Freiburg; it implements the general principle of the “New Universitas”, due to its interdisciplinary approach in research and teaching. It also complements meaningfully the current study programme offer at ALU.

## **1.2 Objectives with regard to qualifications**

The goal of this multidisciplinary programme, oriented as human-relevant research, is to provide theoretical and practical competencies in the fields of biomedicine and translational medicine to graduates of Bachelor courses in natural sciences and life sciences. The programme director and

scientific staff at ALU and UBA consider the combination of biology and medicine to be a relevant field of contemporary and future academic and applied research, also in connection to public relations related to these subjects, ethical concerns and political discourses. Graduates shall be able to better understand cellular and molecular mechanisms of body functions and disease processes, and to develop new approaches to diagnosis forms and therapies together with physicians and other health care professionals (cf. § 3 of the study and examination regulations). They shall bridge the gap from “bench to bedside”.

According to § 3 of the study and examination regulations, the following competencies shall be transmitted in this master programme: The latest scientific knowledge and research methods are taught in the fields of clinical medicine, biostatistics, bioethics, biochemistry, molecular cell biology, immunology, virology and microbiology, neurobiology, physiology, pathology, oncology, cardiology, pharmacology and toxicology as well as material science. In addition, students acquire profound competencies in laboratory reporting, scientific writing, publishing and literature research. During the five-month laboratory internship at ALU, students are to gain first independent insights into a research subject, which will then be the main focus of the master’s thesis. As an internationally oriented study programme entirely taught in English with a very high proportion of foreigners, the study programme not only enhances students’ linguistic competences but also their intercultural competences. Considering this, the ALU relies on an excellent and demonstrable wealth of experience thanks to the well-established DAS “Biomedical Sciences” as well as to the long-time collaboration with the UBA.

The goals and expected competencies of the study programme are appropriately outlined (in English) in the Diploma Supplement. The expert group concludes that both the goals of the study programme and the various competencies to be transmitted are realistically formulated and well achievable.

Students are introduced to professional activities or are prepared for increasing (specialised) requirements in their professional fields. In accordance with the objectives of the study programme, they shall be able to handle complex problems, to make sound decisions on the basis of scientific investigations and analyses, to think and act interdisciplinarily and to network with physicians and other biomedical staff in order to put their acquired knowledge into clinical practice. At the same time, they are supposed to practice working in an intercultural context as well as to develop sensitivity and understanding for persons from other cultures and social environments. Dealing with fellow students from other cultures and with a different mother tongue, as well as with teachers from different disciplines with their own terminology and thinking, is intended to help students develop an open attitude towards unknown areas. They are supposed to become familiar with contemporary and future questions and challenges of bioethics and to learn how new, advanced techniques and methods such as genome sequencing or gene editing can be communicated and

implemented responsibly. In addition, the study programme is designed to arouse the interest in lifelong learning by motivating professionals to experience positive impulses and enrichments for their own work through academic training. Due to the compulsory stay abroad and the intensive individual support, an adequate development of the students' personalities and their ability to social engagement are, according to the opinion of the expert group, ensured.

The study programme aims to qualify graduates for an academic career in university research and teaching, as well as for management positions and consulting activities in the biotech and pharmaceutical industry, the health care sector and in the subject fields of science management, media and patent systems (cf. § 3 of the study and examination regulations). The expert group holds that these qualification objectives cover both specialist and generic aspects: due to the transmitted generic methodological, leadership and team competencies, the students are, in addition to their scientific proficiency enabled to commence a qualified professional activity directly after their studies.

The number of places – 20 students each year – is manageable and appropriate in the face of the heterogeneity of the applicants. Approximately 30 % of the (prospective) students are trained physicians, 70 % of them are supposed to be from non-medical professions. About half of the potential applicants are primarily scientists, while the other half of the applicants are employed outside academia. More than 50 % of the prospective students are expected to be from middle and low-income countries (in particular from Africa, Latin America and Asia).

Statements on the compliance with the standard period of study or on drop out rates can only be made on the basis of the experiences with the DAS "Biomedical Sciences" as well as with the master's programme "Biomedical Sciences" (M.Sc.) based at UBA. With regard to this, the experts do not see any acute need for action.

### **1.3 Conclusion**

The objectives of the study programme are well defined and relevant.

## **2 Concept of the study programme**

### **2.1 Entrance criteria**

The study programme "Biomedical Sciences" (M.Sc.) addresses applicants with prior practical experience and has a strong focus on international recruiting, due to its history as a successful collaborative study programme based at the UBA. The study programme is tailored towards students holding a Bachelor's degree in a very broad area of life or natural sciences. Applicants are required to have at least one year of work experience. This is rather unusual for the field of Biosciences in

Germany, where qualified students would generally opt for a consecutive M.Sc. programme. The B.Sc. qualification, extended by (a one-year-long) work experience, seems to be more prevalent for instance in South America; thus, it may preferentially attract South American students, but also students from other nations, including students from Africa or Asia. The success of the on-going programme based at UBA indicates that the programme “Biomedical Sciences” (M.Sc.) under review will be an attractive option for international students, but currently less so for German applicants. The possibility to directly move into a PhD programme in Argentina certainly has been an additional bonus for South American candidates.

The study programme under review, carried out equally by UBA and ALU, will have a joint application and selection process. Applications will be submitted online and examined both at ALU and UBA.

The programme is, according to the statute for selection, open for a broad range of subject areas. Any life or natural sciences degree with an overall grade of 2.7 or better will suffice. The expected academic competences are limited to 10 ECTS credits, obtained in biochemistry or molecular biology courses, and 10 ECTS credits, obtained in either mathematics, bioinformatics or physics courses. English language skills are required at level B2. An important tool to measure applicants' suitability and pre-qualification is, according to the organisers, the statement of intent.

The expert group states that these criteria generally aim to attract a wide range of international applicants. The required English level B2 may turn out to be insufficient for efficient participation and learning, even though in legal terms (and according to the Ministry of Science of the federal state of Baden-Wuerttemberg) B2 is the adequate English language level for life and natural sciences study programmes. Setting any German “allgemeine oder fachgebundene Hochschulreife” (Abitur, i.e. A level) irrespective of the persons' English language performance as equivalent to the English level B 2 may even fall below this standard. Additional language courses for professional English at ALU are intended to fill the gap between the students' actual and the required language skills. The formal criteria will certainly be met by graduates from a large number of Bachelor programmes. The ranking of applicants for the limited number of places will solely be based on overall grades. These are adjusted by up to 0,3 depending on the quality of the statement of intent (cf. § 8 par. 1 of the statute of selection). ALU's legal department pointed out during the on-site-visit that there exist formal criteria for the assessment of statements of intent which help the binational selection panel to identify appropriate candidates not only according to their overall grade but also by the type and scale of their professional experience as well as their motivation to enrol in the master programme.

There are, however, challenges arising out of the above-mentioned, required low pre-qualifications. Besides the assessment based on the documents there is no additional test or (Skype) interview planned to evaluate the students' qualification. Such additional elements could provide a



better basis for comparison and ranking, though. The expert group points out that the grades of the very diverse Bachelor degrees (different subject areas of different countries) might be difficult to compare and therefore the currently intended assessment procedure might lead to a significant unintended bias. The expert group expects that the current regulations will generate a quite diverse group of students with a broad variety of competences and practical experience. This will certainly create a lively and stimulating student body. However, the experts point out that the heterogeneity of relevant prior academic competences and practical training, which are not adequately levelled up before matriculation, may possibly lower the scientific level of discussion and learning and thus obstruct students' rapid increase of knowledge. Different pre-qualifications are, according to students' observations, also not sufficiently addressed at the start of the studies at UBA. The expert group recognises that the initial aim of the master's qualification is to bring all students to the same technical level and only thereafter to dedicate to their specialised and up-to-date qualification in contemporary issues and problems of biomedical sciences. Nonetheless, the experts regard the way how applicants' pre-qualifications are currently handled as a relevant concern in view of the achievable level of knowledge. Therefore, it is recommended to examine whether pre-courses could be offered to better address the heterogeneity of the applicants' pre-qualifications. This process could be complemented by offering electives and peer-instruction, combined with a detailed assessment of shortcomings for each student with individual prescriptions or recommendations of courses for the extension of technical knowledge. With the small number of students per cohort this should be feasible, and it will certainly improve learning outcomes.

The expert group welcomes that UBA's experiences for selecting appropriate candidates for the running master's programme have extensively been taken into consideration when elaborating the selection criteria and procedure for the study programme under review. This reveals the two universities' close collaboration not only in scientific matters, but also in organisational terms.

The recognition of credits is according to the study and examination regulations (§ 27 par. 5) limited to two thirds of the total number of credits obtainable in the study programme "Biomedical Sciences" (M.Sc.). The mutual recognition of modules at university level is based on the acquired competencies of the students (learning results) according to the provisions of the Lisbon Convention (Convention on the Recognition of Qualifications concerning Higher Education in the European Region developed by the Council of Europe and UNESCO, Article III). As a result, recognition must be granted, unless there are significant differences in the acquired competences (shift in the burden of proof, Art. V). The study and examination regulations must not include quantitative restrictions with regard to the extent of credits to be recognised.

The recognition of competences acquired outside the higher education system is sufficiently defined in the study and examination regulations (§ 27 par. 10).

The admission process in general has worked in the past with impressive outcomes, given the inherent difficulties of such a transcontinental programme, but there is certainly room for improvement that should be addressed with the beginning of the double degree programme.

## 2.2 Structure of the programme

The study programme is institutionally and organisationally split between ALU and UBA. The initial, rather theoretical training is offered by UBA, during a study period of approximately eight months. This period comprises the modules “Biophysics, Bioenergetics (Ia), Biochemistry and Molecular Biology (Ib)”, “Physiology (IIa), Pathophysiology (IIb), Cellular and Molecular Immunology (IIc)”, “Pharmacology (IIIa) and Toxicology (IIIb)”, “Virology (IVa) and Microbiology (IVb)”, “Neurobiology”, “Pathology”, “Clinical Medicine” and “Molecular Oncology (VIIIa), Biostatistics and Experimental Models (VIIIb)”. Students obtain a total of 40 ECTS credits. Besides this, they attend a Spanish language course which corresponds to additional 3 ECTS credits. Subsequently, students go through the second study phase at ALU, also of approximately eight months, where they complete the modules “Biostatistics (Ia) and Bioethics (Ib)”, “Pharmacology, Toxicology (IIa), Materials and Microsystems (IIb)”, “Molecular Oncology (IIIa) and Cardiology (IIIb)”, “Molecular and Cellular Biology (IVa), Immunology and Pathology (IVb)” and “Laboratory Research” with a total of 44 ECTS credits. Besides this, they attend an “Introduction into research methods and scientific communication” at the commencement of their studies at ALU and a German language course comprising another 3 ECTS credits. Subsequent thesis work can be done at either ALU or UBA. From the point of view of the expert group, there is no need for further mobility windows as this would unnecessarily complicate structures.

Some students argued that especially bioinformatics and biostatistics training is not sufficiently represented; however, the expert group does not consider this to be critical. Such views will also surface in evaluations and may guide future adaptations of the programme, however. A more urgent need seems to be in laying the groundwork for in-depth research-based teaching in Freiburg. Too many students seem to struggle to grasp the content of seminars on current research done by the teaching staff because they lack general background information, due to their prior academic and professional thematic focus. Besides enhanced general training, students also suggested to integrate more practical work into the first period of study in Buenos Aires, in order to intensify the process of learning. Despite extensive feedback options (small groups, long evaluation sheets), this problem of imbalanced basic training apparently has not yet received enough attention. The expert group therefore recommends to focus future adjustments on the balance between still necessary broader coverage of subjects and research-driven “teaching by example” of scientifically active lecturers – at UBA by integrating more practical work and at ALU by extending subjects beyond individual teachers’ foci.

The extent of practical training in Freiburg was viewed as appropriate by students, and the ALU modules certainly provide excellent and high-quality options for this. With regard to this, the module descriptions partly include quite short study times. This may be due to the frequently observed problem of fitting existing and successful training programmes into modules with only 5 ECTS credits. Nevertheless, the written material (programme documentation and module handbook) should better reflect the actual implementation of teaching. The large “Laboratory Research” module appears flexible and long enough to ensure that students can become familiar with research-oriented lab work and to prepare for their thesis project.

Generic competences, soft skills and professional training are embedded sufficiently in the programme. In order to further improve conditions for professional direct entry, appropriate consulting and training services (for example the obtainment of certificates according to § 15 GenTSV, § 44 InfSchG, FELASA / Experimental Animal Science, Radiation Protection etc.) could be enhanced. The need to acquire such additional qualifications that prepare students for professional activities can already be addressed at an early stage of their training. Due to the diversity of the students’ professional backgrounds and nationalities, it will be important to continually transmit the specificities of the German health care system (e.g. restriction to medical professionals regarding certain professional activities) to students, mainly to those interested in pursuing their careers in Germany. Beyond this, the large networks that students can create with their fellow students and professors in Buenos Aires and Freiburg during the time of their studies can be professionally relevant.

Generally, the study programme is quite rigid, with rather little room for setting individual preferences. There are no electives available. Both at UBA and ALU the curriculum should include elective subjects in order for students to pursue their individual scientific interests. The current “one size fits all” approach does not only create problems at the start, but also in the advanced courses at ALU. Currently, individual prioritisation occurs mainly during the 5 months laboratory research, but at that point there are no more lectures integrated and training only relies on the variable time and effort spent by the individual lab members supervising the students. Students and experts agreed during the on-site-visit in the point that more chances for an individual specialisation of the students would be desirable. This could further improve the study programme’s quality. According to the director of the programme, electives – such as Big Data or entirely theoretically oriented subjects – may easily be integrated into the five-month laboratory research period. Generally, students appreciate the broadness, but some students would welcome a still broader offer on topics such as cancer, gene editing or bioinformatics. The expert group agrees that within the scope of possibilities offering such topics of current interest would be very welcome.

Agreements on possible subjects offered to students during their stay in Buenos Aires are individually made between professors and students, thus allowing for individual scientific support. The expert group welcomes the flexibility and dedication of teachers at UBA – but also at ALU – to

intensely accompany individual students' processes of learning. There is also a parallel programme in Biomedicine ("Molecular Medicine", M.Sc.) at ALU, which would be an ideal candidate for a module exchange. Also at UBA there exist similar master programmes that could be interlinked with the programme "Biomedical Sciences" (M.Sc.) in terms of teaching imports. A student exchange would facilitate the implementation of elective courses without the risk of having too small groups to sustain efficiency in teaching.

The courses in general certainly fit well to the intended training outcomes, and the overall selection of topics is similar to other biomedical programmes.

In summary, the programme structure has successfully been in place for several years by now and it has been adapted to become a full M.Sc. study programme with a double degree according to the Bologna regulations. Students and alumni acknowledge the good overall design, but they also see the need for more electives and a better alignment of basic/ theoretical instructions as well as intensive research-based training along specific interests of faculty members.

Furthermore, the expert group points out that the curriculum and the conceptualization of the study programme allow for students' qualification at an equal level as consecutive Master programmes. Also, the concept of the study programme ensures that students are appropriately prepared for pursuing their career both in and outside academia after having graduated. Besides this, their professional experience acquired prior to the programme is well considered in their academic studies. Thus, the programme complies with important criteria of the German Accreditation Council for Master's study programmes providing further education.

### **2.3 Modularisation and work load**

The number of ECTS credits per working hour is defined in the study and examination regulations (§ 4 par. 2). The exact number of ECTS credits per module is listed in the study and examination regulations (§ 6) and defined in each module description. Furthermore, the different teaching and learning formats are described for each module (lectures, tutorials, practical work assignments, project work, private study, etc.). The scale of modules is appropriate.

The expert group considers the calculation of ECTS credits in modules to be in some cases not quite adjusted to reality. During the on-site-visit, students stated the curriculum to be intense and demanding but manageable. Modules are structured in submodules in order to cover a wide spectrum of subject areas. Good examples are the modules 1 and 2 in UBA or module 5 in Freiburg. Some modules conclude with more than one exam. The legal department of ALU is aware of this variance from KMK requirements, but stated convincingly during the on-site-visit that exceptions to KMK requirements are acceptable as long as the workload does not exceed an acceptable scope. In fact, students (of the already running UBA-based master's programme) have generally handled well the challenges of the programme. The examination results as well as drop out quotes

and adherence to the standard period of study seem to be within the expected ranges. In any case, the expert group suggests continual monitoring of the modular structure and students' workload as well as their examination burden. In order to reduce the workload, some of the examinations may, for instance, be transformed into pre-examinations that are not graded or not relevant for the module grade. The study and examination regulations already provide for a distinction between examinations and pre-examinations. However, this is not yet implemented in the module catalogue. Also, a distinction between oral and written examinations is not stringently implemented in the module catalogue. Therefore, the expert group points out that the study and examination regulations and the module catalogue must be harmonised with regard to the types of examinations.

Module descriptions include formal aspects, and clear descriptions of the goals and content of modules as well as admission requirements. However, the descriptions of target qualifications and learning outcomes appear to be rather overambitiously for some modules. Wording should be revised in order to harmonise learning contents and objectives with the envisaged workload. Furthermore, the explicit claim of training students for big data, personalised medicine and gene editing can only be substantiated with more training in these fields; the programme directors pointed out during the on-site-visit that respective training will be offered, even though its conceptualisation is currently, and due to the novelty of the programme under review, still 'in statu nascendi'.

The expert group also noticed that the module descriptions and formalities are entirely done by the programme coordination in Freiburg. It is important that UBA colleagues are involved continuously in all issues regarding the Bologna requirements, ECTS credits, evaluation standards and the like.

## **2.4 Teaching methods**

Both in Buenos Aires and in Freiburg teaching occurs mainly via lectures, seminars, exercises and group work. In Freiburg, experimental research is conducted in the laboratory. In the laboratory phase, students are included in the work group. They attend meetings and journal clubs, and they exchange ideas with the supervisors and tutors. The teaching methods are sufficiently multi-variant and support students' competences relevant for their future professional careers.

## **2.5 Examinations**

The examination types are formulated according to the specific competences to be evaluated. With regard to oral and written exams it is not identically defined the study and examination regulations and the module catalogue which types of exams are exactly envisaged in each module. Therefore, the study and examination regulations and the module catalogue must be harmonised with regard to the types of examinations.

Diverse qualification objectives are reflected in multi-variant examination types. Examinations occur within modules; in some modules more than one examination takes place; these exceptions are well-founded and adequate. The density of examinations has been positively assessed by the students, even though the study programme is quite dense and challenging.

The legally verified and published study and examination regulations must still be submitted for accreditation.

## **2.6 Conclusion**

From the point of view of the expert group, the concept of the study programme as a whole seems appropriate to achieve the clearly defined and relevant course objectives.

## **3 Implementation**

### **3.1 Resources**

The scientific staff for offering the study programme consists of professors and other lecturers both from the ALU and UBA, as well as from the University of Furtwangen and the Thales Academy for Economics and Philosophy. A total of 14 lecturers in Buenos Aires and 15 lecturers in Freiburg from different faculties participate in the programme. In addition, six external lecturers (two from the University of Buenos Aires) offer classes in Freiburg. Accordingly, sufficient human resources with an appropriate technical qualification are designated for conducting the study programme on a high level. The faculty-student ratio is favourable due to the high number of teachers in the programme.

For each module, a depute or successor has already been nominated; therefore, gaps in teaching specific subjects that are envisaged in the curriculum are not to be expected. Beyond this, the reservoir of potential teachers is large. Accordingly, adjustments in terms of theoretical subjects and themes in laboratory work can easily be made over the years, and thematic flexibility is ensured. The expert group considers a better anchoring of the study programme in the ALU to be desirable.

At each study location, one person (part-time 80%) is available for the coordination of the study programme. In Buenos Aires, this is financed by the university's general budget, the coordinator in Freiburg is financed by the budget of the programme. In addition, a scientific assistant is designated for supporting studies in Freiburg.

All in all, the teaching and examination workload is rather high, but evenly distributed. This was also confirmed by the students who actually do not believe that the teaching and examination workload should be reduced.

There exist content-related links to the German programme “Molecular Medicine” (M.Sc.). However, according to the perception of the experts this potential is not fully exploited yet; for instance resources (laboratories, equipment) could be used jointly. The coordinators should further deepen this linkage, also to be able to use synergies in teaching and learning, especially with regard to the organisation of the laboratory practical training.

At the level of the study programme, no measures are taken for human resource development or qualification. Respective offers, however, are made and measures implemented by ALU’s quality management system.

During the on-site visit, the expert group was allowed to have a look on the programme’s financial plan which conclusively presents its appropriate equipment and guarantees the programme’s feasibility. During the tour the experts were able to convince themselves that the laboratories of the Faculty of Medicine are adequately equipped and especially in the area of molecular medicine they are state-of-the-art. The available resources are suitable to support high-quality teaching.

According to the guidelines of the ALU for further education courses, the study programme, including professional fees for teachers and flights of teachers and students, is entirely financed by tuition fees. Compared to similar study programmes, the tuition fee system can be regarded as viable. The expert group verified, however, that the relatively high tuition fees as well as the living costs might not be easy to bear for some of the students. The expert group also considers the information on possible scholarships available to students to be rather little; this may lead to recruitment being based less on academic achievement, but on financial background. ALU has ensured the accessibility to various funds (Biothera Foundation or DAAD, among others), so that tuition fees can be fully covered or reduced for students, independently from their individual financial opportunities. According to the ALU, the amount of tuition fees will be adjusted to the number of matriculations. Nonetheless, consideration should be given to whether the imbalance of study costs for students coming from diverse financial and national backgrounds can be tackled more systematically by the ALU and the UBA.

## **3.2 Processes of decision-making, organisation and cooperation**

### **3.2.1 Organisation and processes of decision-making**

The decision-making processes are clearly defined. The study committee consists of two professors from the Faculty of Medicine in Freiburg, one professor of the Faculty of Medicine and of the Faculty of Pharmacy and Biochemistry in Buenos Aires respectively, of the programme coordinators of the both universities and of two students from both universities. It is run by the two programme directors (ALU and UBA). They meet every three months, and more frequently when



necessary. Thus, students are also represented in this important body and can contribute to the further development of the programme.

The coordination office for the study programme in Freiburg is located at the Institute for Molecular Medicine (IMMZ). The IMMZ is part of the Faculty of Medicine (pre-clinic) and was founded in 1999.

The expert group appreciates the involvement of alumni into the networks of current students through alumni meetings and workshops on the variety of job opportunities.

### 3.2.2 Cooperations

The study programme is carried out together with the UBA. The respective cooperation agreement has been signed. Further cooperations have been established with the University of Furtwangen and the Thales Academy for Economics and Philosophy. The cooperation relationship is properly regulated and well organized. Currently, no cooperations have been established with institutions working in the field of biomedicine.

## 3.3 Transparency and documentation

The documents relevant to the organisation of the programme (study and examination regulations, course schedule and module catalogue) are available. However, these documents are currently only available in German. As it concerns a programme entirely carried out in English, due to the binational conceptualisation of the programme and with regard to the heterogeneous backgrounds of the students, the study and examination regulations, the statutes of selection, the course schedule and the module catalogue must also be made available in English. Besides this, these documents currently are not available at the website of the study programme (<http://www.biomedmaster.org/overview/international-master-in-biomedical-sciences/modules-in-freiburg/>) – neither in German nor in English –, which ought to be rectified.

The relative ECTS grade is not made transparent in the diploma supplement, transcript of records or degree certificate. This must be rectified, too.

Currently, the study programme appears in the diploma supplement as well as the degree certificate to be hosted exclusively by ALU; the University of Buenos Aires is not mentioned. The expert group sees the need that the University of Buenos Aires must be mentioned as institution equally responsible for the study programme and for the awarding of Master certificates in the diploma supplement (sections 2 and 3). According to the programme directors, each university issues one certificate.

The following institutions are available for the counseling of the students: heads of the programme, coordinators, mentoring system, study commission, and advisory institutions of the university on all relevant aspects. This offer is appropriate in the opinion of the expert group. Due to



the international character of the double degree programme, the two programme coordinators are also the contact persons for the study abroad (in Germany or Argentina, respectively). The expert group got the impression that the coordination office in Freiburg supports students well in bureaucratic issues, also those coming from abroad who are not acquainted with German regulations, habits etc. This is also the case with the coordination office in Buenos Aires, where students receive considerable support. However, support for the students before arriving at Buenos Aires could be improved. Obtaining their visa is challenging for some of the students as the Argentinian Embassies or Consulates in their home countries are usually not acquainted with the programme. Students also find it difficult to find accommodation prior to their arrival at Buenos Aires, since they mostly do neither speak much Spanish nor are acquainted with recommendable city districts where accommodation is affordable and well reachable from the University's facilities. Therefore, students should receive more support in organisational issues prior to their studies in Argentina from the University of Buenos Aires, in coordination with the Albert-Ludwigs-University. In general, cultural differences between Latin American and European or Asian and African ways of handling everyday challenges were noticeable to many of the students and affected the commencement of their studies. These differences might be considered and discussed with students more consistently by both ALU and UBA directors and coordinators. An introductory week including a "cultural training" is offered to students at the beginning of their studies both in Freiburg and Buenos Aires which is, according to the expert group's estimation, a good initiative, though the timely limited offer might be further expanded.

### **3.4 Gender justice, equality of opportunities**

The ALU has adopted an appropriate approach to achieve gender equality and the promotion of equal opportunities, which was adopted in 2008. The expert group did not receive information on whether a similar concept has been drawn up at UBA. According to the reviewers, no distinct approaches to improving gender equality or the promotion of equal opportunities are developed within the study programme. As measures at University level are appropriate, this is uncritical. The study and examination regulations (§ 30) contain detailed regulations for the compensation of disadvantages with regard to students with disabilities or in special living conditions.

### **3.5 Conclusion**

According to the expert group, the necessary resources and organisational prerequisites are given to implement the study programme's concept consistently and purposefully. The resources sustain the concept and its realisation. Personal and material resources are adequately available and meaningfully used. The decision-making processes are transparent and appropriate with regard to the concept and the fulfilment of the programme's defined objectives.

## **4 Quality Management**

### **4.1 Organisation of quality assurance processes and implementation of quality assurance results**

At ALU, instruments and processes for quality assurance are implemented at the University, Faculty and course level and will also be applied to the study programme “Biomedical Sciences” (M.Sc.). Additionally, the Faculty of Medicine provides the University with a specific conceptualisation of quality assurance. Student surveys are carried out, as well as teacher evaluations and evaluations of the initial stage of study. Alumni surveys are carried out two years after students’ graduation.

The experts consider the applied measurements in quality management and quality assurance to be on a high level. From the perspective of the experts the quality of the statistical data on student progression and success rates, the profile of the student population, the employability of graduates as well as the institution’s own key performance indicators as a valid basis for monitoring and improvement are satisfactory.

At UBA, CONEAU evaluates all aspects of study programmes involving teaching quality, equipment of the laboratories, availability of contact persons, number of theses, drop out quotes and standard period of study, among others. According to the head of the master’s programme, the UBA has recently achieved the best result among all Argentinian universities. It will be important for the quality assurance concept of the study programme, that the modules of the programme under review are continuously integrated in UBA’s quality management system.

The faculty explained and illustrated that for each module questionnaires are used including a monitoring of the student workload. Nevertheless, the evaluation of the students’ workload seems to be quite poor, due to the fact that it is roughly covered with one question out of forty two in the module’s questionnaire. The anonymity of such evaluation forms is one of the main important aspects that needs to be assured in any evaluation form that provides objective and useful data for the further analysis. In the Lab research evaluation form included in the documentation, several questions that are included in the open questions part allow to easily track down the particular student providing with the evaluation form. Furthermore, the final evaluation that is provided by graduates includes no information on the programme’s workload. This could give a more holistic view on the workload of the programme as a whole and not only of individual modules. The expert group suggests to include such aspects and to improve the evaluation forms that are currently used as they are quite extensive and do not favour adherence.

### **4.2 Conclusion**

Procedures for reviewing the objectives of the course, the concept and its implementation have been established. They are appropriate. Adequate measures are derived and implemented.

## 5 Résumé

The market analysis of ALU indicates that the study programme "Biomedical Sciences" (M.Sc.) is unique and attractive in Europe, South America and beyond. It is one of the few Master's study courses providing further education of this kind which is carried out as a presence-study course in two countries (Germany and Argentina) and on two continents (Europe and South America), taught entirely in English and offering German and Spanish language courses as well as courses on scientific and intercultural communication. The double degree which also documents the internationality of the programme will further increase the programme's attractiveness, so that even more students from all over the world, especially from Germany, will apply. After a successful accreditation, ALU will also be able to apply for sustained financial support at the German-Argentinian University Center (DAHZ / CUAA).

The expert group points out that due to the binational conceptualisation of the programme and the heterogeneous backgrounds of the students, the study and examination regulations, the statutes of selection, the course schedule and the module catalogue must also be made available in English. Additionally, the University of Buenos Aires must be mentioned in the diploma supplement (sections 2 and 3) as institution equally responsible for the study programme and for the awarding of master certificates. Furthermore, the study and examination regulations and the module catalogue must be harmonised with regard to the types of examinations. Other criticism concerns formalities as the necessity to publish the study and examination regulations and the like.

The programme under review can build on numerous experiences and know-how, both in Freiburg and Buenos Aires. The expert group concludes that therefore, and due to the sound concept and convincing implementation strategy, the programme promises to be successful and enriching for many prospective professionals and academics in biomedical sciences.

## 6 Evaluation according to the "Standards and Guidelines for Quality Assurance in the European Higher Education Area" (ESG) in the current official version

### Evaluation according to the "Criteria for the Accreditation of Study Programmes" (resolution of the Accreditation Council as of 8 December 2008, last amended on 20 February 2013)

#### Criterion 1: Qualification Objectives of the Study Programme's Concept:

- The criterion is fulfilled.

#### Criterion 2: Conceptual Integration of the Study Programme into the Study System

- The criterion is fulfilled.

### **Criterion 3: The Study Programme's Concept**

- The criterion is partly fulfilled.

Recognition of credits for matriculation is, according to the study and examination regulations (§ 27 par. 5), limited to two thirds of the total number of credits obtainable in the study programme "Biomedical Sciences" (M.Sc.). The mutual recognition of modules at university and university level is based on the acquired competencies of the students (learning results) according to the provisions of the Lisbon Convention (Convention on the Recognition of Qualifications concerning Higher Education in the European Region developed by the Council of Europe and UNESCO, Article III). As a result, recognition must be granted, unless there are significant differences in the acquired competences (reversal of the burden of proof, Art. V). The study and examination regulations must not include quantitative restrictions with regard to the extent of credits to be recognised.

The study and examination regulations and the module catalogue must be harmonised with regard to the types of examinations.

### **Criterion 4: Academic Feasibility**

- The criterion is fulfilled.

### **Criterion 5: Examination System**

- The criterion is partly fulfilled.

The legally verified and published study and examination regulations must be submitted for accreditation.

### **Criterion 6: Programme related Co-operations**

- The criterion is fulfilled.

### **Criterion 7: Facilities**

- The criterion is fulfilled.

### **Criterion 8: Transparency and Documentation**

- The criterion is partly fulfilled.

The University of Buenos Aires must be mentioned in the diploma supplement (sections 2 and 3) as institution equally responsible for the study programme and for the awarding of Master Certificates.

The study and examination regulations, the statutes of selection, the course schedule and the module catalogue must also be made available in English.

The relative ECTS grade must be accounted for in the diploma supplement, transcript of records or degree certificate.

#### **Criterion 9: Quality Assurance and Further Development**

- The criterion is fulfilled.

#### **Criterion 10: Study Programmes with a Special Profile Demand**

- The criterion is fulfilled.

#### **Criterion 11: Gender Justice and Equal Opportunities**

- The criterion is fulfilled.

## **7 Accreditation proposal**

The expert group proposes an accreditation with conditions. The expert group proposes the following conditions:

1. Recognition of credits for matriculation is, according to the study and examination regulations (§ 27 par. 5), limited to two thirds of the total number of credits obtainable in the study programme "Biomedical Sciences" (M.Sc.). The mutual recognition of modules at university and university level is based on the acquired competencies of the students (learning results) according to the provisions of the Lisbon Convention (Convention on the Recognition of Qualifications concerning Higher Education in the European Region developed by the Council of Europe and UNESCO, Article III). As a result, recognition must be granted, unless there are significant differences in the acquired competences (reversal of the burden of proof, Art. V). The study and examination regulations must not include quantitative restrictions with regard to the extent of credits to be recognised.
2. The legally verified and published study and examination regulations must be submitted for accreditation.
3. The study and examination regulations and the module catalogue must be harmonised with regard to the types of examinations.
4. The study and examination regulations, the statutes of selection, the course schedule and the module catalogue must also be made available in English.
5. The relative ECTS grade must be accounted for in the diploma supplement, transcript of records or degree certificate.

6. The University of Buenos Aires must be mentioned in the diploma supplement (sections 2 and 3) as institution equally responsible for the study programme and for the awarding of Master Certificates.

## IV Decisions of the Accreditation Commission of ACQUIN<sup>1</sup>

### 1 Accreditation decision

Based on the evaluation report of the expert group, the statement of the HEI and the statement of the Standing Expert committee, the Accreditation Commission made the following decision on 27 September 2017:

**The study programme “Biomedical Sciences” (M.Sc.) is accredited for the first time with the following conditions:**

- **Since the Lisbon Convention does not provide for a restriction beyond the essential difference in the recognition of benefits, the rule concerning the limitation of the possible recognition to two-thirds of the study programme must be deleted from the study and examination regulations (§ 27 par. 5).**
- **The legally verified and published study and examination regulations must be submitted for accreditation.**
- **The study and examination regulations and the module catalogue must be harmonised with regard to the types of examinations.**
- **The study and examination regulations, the statutes of selection, the course schedule and the module catalogue must also be made available in English.**
- **The relative ECTS grade must be accounted for in the diploma supplement, transcript of records or degree certificate.**
- **The University of Buenos Aires must be mentioned in the diploma supplement (sections 2 and 3) as institution equally responsible for the study programme and for the awarding of Master Certificates.**

**Accreditation is temporary and valid until 31 March 2019.**

**The Higher Education Institution must submit documents that prove the fulfilment of the conditions by 24 Juli 2018. If the Accreditation Commission comes to the conclusion that the conditions are fulfilled, the accreditation will be extended until 30 September**

---

<sup>1</sup> *Gemäß Ziffer 1.1.3 und Ziffer 1.1.6 der „Regeln für die Akkreditierung von Studiengängen und die Systemakkreditierung“ des Akkreditierungsrates nimmt ausschließlich die Gutachtergruppe die Bewertung der Einhaltung der Kriterien für die Akkreditierung von Studiengängen vor und dokumentiert diese. Etwaige von den Gutachtern aufgeführte Mängel bzw. Kritikpunkte werden jedoch bisweilen durch die Stellungnahme der Hochschule zum Gutachterbericht geheilt bzw. ausgeräumt, oder aber die Akkreditierungskommission spricht auf Grundlage ihres übergeordneten Blickwinkels bzw. aus Gründen der Konsistenzwahrung zusätzliche Auflagen aus, weshalb der Beschluss der Akkreditierungskommission von der Akkreditierungsempfehlung der Gutachtergruppe abweichen kann.*

**2022. If the Higher Education Institution fails to prove the fulfilment of the conditions in due time, the accreditation will not be extended.**

**The accreditation procedure may be suspended for up to 18 months after response from the Higher Education Institution, with the expectation that the Higher Education Institution will remedy the deficiencies within the given time frame. This statement must be submitted until 24 November 2017.**

For the further development of the study programme the following recommendations are given:

- It should be examined whether pre-courses could be offered to better meet the heterogeneity of the applicants' pre-qualifications.
- Both at the University of Buenos Aires and the Albert-Ludwigs-University the curriculum should include elective subjects in order for students to pursue individual scientific interests.
- In the module catalogue, learning contents and objectives should be harmonized with the envisaged work load.
- Future adjustments of the programme should focus on the balance between still necessary broader coverage of subjects and research-driven "teaching by example" of scientifically active lecturers. At the University of Buenos Aires more practical work should be integrated, at the Albert-Ludwigs-University subjects should extend beyond individual teachers' foci.
- Consideration should be given to whether the imbalance of study costs for students coming from diverse financial and national backgrounds can be tackled more systematically by the Albert-Ludwigs-University of Freiburg and the University of Buenos Aires.
- Students should receive more support in organisational issues prior to their studies in Argentina from the University of Buenos Aires, in coordination with the Albert-Ludwigs-University of Freiburg.

## **2 Fulfilment of Conditions**

The university forwarded in due time the documents proving the fulfilment of the conditions. These have been forwarded to the technical committee with a request for comments. The technical committee considered the conditions to be fulfilled. Based on the opinion of the technical committee, the accreditation commission took at its meeting on the 25 September 2018 the following decision:

**The conditions of the master programme "Biomedical Sciences" (M.Sc.) are fulfilled. The accreditation will be extended until 30 September 2022.**