Accreditation Report
Faculty of Mathematics and Natural Sciences
University of Prishtina

The Report composed

by the team of experts,

Prof. Dr. Henrik Toft Jensen/ Roskilde University (DK)
Prof. Dr. Jens Hoegaard Jensen/ Roskilde University (DK)
Prof. Dr. Peeter Normak/ Tallinn University (EE)
Prof. Dr. Fekete Csaba/ University of Pécs (HU)
Prof. Dr. Mladen Krajacic/ University of Zagreb (HR)
Prof. Dr. Predrag Novak/ University of Zagreb (HR)
Prof. Dr. Vladislav Tomišić/ University of Zagreb (HR)
Ms. Arus Harutyunyan/ European Students Union (EU)

assessing sixteen study programmes of the Faculty

May 30th, 2016

Table of Contents

1. Introduction 5
   1.1. Preparation 5
   1.2. Experts and assigned study programmes 5
   1.3. On-site visit 6
   1.4. Meeting with institutional management 6
2. Student management: Faculty of Mathematics and Natural Sciences 7
3. Computer Science (BA, reaccreditation) 8
   3.1. Academic programmes and student management 9
   3.2. Staff 12
   3.3. Research and international co-operation 12
   3.4. Finances and infrastructure/space and equipment 12
   3.5. Quality management 13
4. Study Programmes in Geography – General Considerations 13
   4.1. Introduction 14
   4.2. The academic programme and student management 14
   4.3. Staff 14
   4.4. Research and international collaboration 15
   4.5. Finances and infrastructure 15
   4.6. Quality management 15
   4.7. General Recommendations 15
5. Geography (BA, reaccreditation) 16
   5.1. The academic programme and student management 16
   5.2. Recommendation 16
6. Geography (MA, reaccreditation) 16
   6.1. The academic programme and student management 16
   6.2. Recommendation 17
7. Study Programmes in Physics – General Considerations 17
   7.1. Introduction 17
   7.2. Teaching 17
   7.3. Research 18
   7.4. Staff 18
8. Physics (BA, reaccreditation) 18
   8.1. The academic programme and student management 18
   8.2. Staff 19
   8.3. Facilities 19
9. Physics (MA, reaccreditation) 19
   9.1. The academic programme and student management 19
   9.2. Teaching staff 19
   9.3. Facilities 20
10. Study Programmes in Chemistry – General Considerations 20
   10.1. Introduction 20
   10.2. Academic programmes and student management 21
   10.3. Staff 22
   10.4. Research and international collaboration 22

10.5. Finances and infrastructure/Space and equipment 23
10.6. Quality management 23
10.7. General recommendations 23
11. Engineering Chemistry (BA, reaccreditation) 24
11.1. Academic programmes and student management 24
12. Chemistry (BA, reaccreditation) 24
12.1. Academic programmes and student management 24
13. Organic Chemistry (MA, reaccreditation) 24
13.1. Academic programmes and student management 24
14. Physical and Inorganic Chemistry (MA, reaccreditation) 24
14.1. Academic programmes and student management 24
15. Analytical and Environmental Chemistry (MA, reaccreditation) 25
15.1. Academic programmes and student management 25
16. Chemistry (PhD, reaccreditation) 25
16.1. Academic programmes and student management 25
17. Food Chemistry (BA, reaccreditation) 25
17.1. Academic programmes and student management 25
17.2. Recommendations 25
18. Ecology and Environment Protection (BA, re-accreditation) 26
18.1. Satisfaction of recommendations of the previous accreditation 26
18.2. Academic programme and student management 26
18.3. Staff 27
18.4. Research and international collaboration 27
18.5. Finances and infrastructure/space and equipment 27
18.6. Quality management 27
18.7. Recommendations 28
19. Ecology and Environment Protection (MA, reaccreditation) 28
19.1. Satisfaction of recommendations of the previous accreditation 28
19.2. Academic programme and student management 28
19.3. Staff 29
19.4. Research and international collaboration 29
19.5. Finances and infrastructure/space and equipment 29
19.6. Quality management 29
19.7. Recommendations 29
20. Biology (BA, reaccreditation) 31
20.1. Introduction 31
20.2. Academic programmes and student management 31
20.3. Teaching staff, publication activity and research facilities 31
20.4. Financial condition 32
20.5. Recommendations 32
21. Biology of Organisms and Ecology (PhD, reaccreditation) 32
21.1. Academic programme and student management 32
21.2. Teaching staff, publication activity and research facilities 33
21.3. Financial condition 33
21.4. Recommendations 33
22. General Comments 34
23. Recommendations to the Administration of the University 34

24. Proposals for the Decision on Accreditation and Reaccreditation 35
Annex: the lists of participants on the meetings 36

1. Introduction

The present document contains the final evaluation report 2016 on Faculty of Mathematics and Natural Sciences, University of Prishtina (*the Faculty*). It is the result of the collegial work of an international team of experts (ET) appointed by the Kosovo Accreditation Agency (KAA) to evaluate 16 study programmes. The report bases on the self evaluation report (SER) of the Faculty, the visit of the expert group in the Faculty on 30th of May 2016 and further information of the Faculty, obtained by the expert group.

1.1. Preparation

The Faculty submitted a detailed SER as the central document for the accreditation of the study programmes. The report has 838 pages and contains a brief description of the institution's history, study programmes under evaluation, staff, students, quality assurance, infrastructure, research, financing, plan for the implementation recommendations from the last accreditation and two appendices. The CV-s of academic staff were presented separately. The SER and other documents were made available to the expert team on 19.05.2016. The mission statements of the University and of the Faculty, as well as two course syllabi (Diploma Thesis and Practical Work, both of the Computer Science study programme) were sent to the ET after the site visit.

1.2. Experts and assigned study programmes

- Prof. Dr. Henrik Toft Jensen/ Roskilde University (DK): Geography (BA and MA, reaccreditation)
- Prof. Dr. Jens Hoegaard Jensen/ Roskilde University (DK**):** Physics (BA and MA, reaccreditation)
- Prof. Dr. Peeter Normak/ Tallinn University (EE): Computer Science (BA, reaccreditation)
- Prof. Dr. Fekete Csaba/ University of Pécs (HU): Biology (BA and PhD, reaccreditation)
- Prof. Dr. Mladen Krajacic/ University of Zagreb (HR): Ecology and Environment Protection (BA and MA, reaccreditation)
- Prof. Dr. Predrag Novak/ University of Zagreb (HR): study programmes in chemistry
- Prof. Dr. Vladislav Tomišić/ University of Zagreb (HR): study programmes in chemistry
- Ms. Arus Harutyunyan/ European Students Union (EU): student representative

1.3. On-site visit

On May 29th, the experts gathered in the evening for a preliminary working dinner together with two members of the KAA:

- Mr Fisnik Gashi, Officer for Evaluation and Monitoring
- Mr. Shkelzen Gerxhaliu , Officer for Evaluation and Monitoring

They talked about their first impressions of the SER and the programme for the on-site visit (OSV) the following day.

The OSV took place as planned. The scheduled OSV started in the morning of 30th with a meeting with the management of the Faculty from 9.00-9.30 (see below), followed by the meetings with the responsible persons for the study programmes (9.30-11.30), visit to facilities (11.30-12.30), lunch and discussions of ET and participating KAA members (12.30-14.00), meeting with academic staff (14.00-15.00) and with students (15.00-16.00).
The visit ended with short consultations of ET and KAA (16.00-16.15) and a final meeting with the management of the institution (16.15-16.25).

1.4. Meeting with institutional management

From the management of the university, the following colleagues took part: Teuta Pustina – vice rector, Kimete Lluga – coordinator for quality assurance, Besnik Loxha – director of the office for academic development, Tahir Arbneshi – dean of the Faculty, Agim Gashi – vice dean of the Faculty, Naim Syla – vice dean of the Faculty, Jeton Hyseni – secretary of the Faculty (see the annex for the list of participants of each activity).

The ET was given an overview of the history and of the budget of the Faculty. The means for supporting research were literally non-existent, so that attending on international conferences is possible only if personal savings are used.

The scarce opportunities for mobility of students, organizing practical work and industrial placement were mentioned as the major bottlenecks in the teaching students.
***

As the BA and MA programmes in Geography, Physics and Chemistry are to a great extent using the same resources, we describe the common aspects first (under the title General Considerations), followed by specifics of these study programmes.

***
The ET is indebted to the Faculty for facilitating the site visit – the discussions and the opportunity to see facilities were particularly valuable. The ET would like to thank the Faculty for its hospitality.

In addition, the experts warmly thank the KAA and its representatives for their outstanding support and cooperation before, during and after the visit.

2. Student management: Faculty of Mathematics and Natural Sciences

This section discusses the faculty level procedures that apply to all study programmes of the faculty.

Following the Self Evaluation Report, consulting and guidance activities are provided by most of the teachers for his/her subjects. Students are expressing their high appreciation for the thoughtful approach towards them.

Academic results obtained in other higher education institutions are supposed to be recognized according to a defined recognition procedure. ECTS Learning agreements shall guarantee the transfer of credits for realized and promoted courses by the student within the compatibility of education aims and the curricula of the institutions involved.

The assessment regulations are **defined and published.** They are available to the students, although changes to the examination concept should be documented, explained and regulated appropriately.

Evaluation forms and methods of assessment are discussed at the managerial level of the faculty, there are established mechanisms, assessment methods include oral and written exams/testing and group assignments/projects.

Although the issue is carefully discussed during the faculty council meetings students lack credible participation in those discussions, they are mostly just bearers of the final decisions.
Information is available for students in some ways (through the university website), yet it is not documented. Official and structured student participation and representation in such issues is highly encouraged. Those should be specially trained students in terms of student representation to represent research and reveal the student needs and issues on faculty level, be democratically elected by faculty students to represent those issues and suggestions on their behalf, disseminate information on the faculty level and be responsible for the feedback. More student self-organisational trainings and experience exchanges are highly encouraged.

Recommendation. Agree on and implement an internal policy for the faculty's study programme assessment. It is recommended to review the policy on annual basis, to document the roundtable discussions with the university management, academic staff, students and employers.

The university regulates assessment by the composition of regular attendance: 5%; final exam: the written exam assignment 40%; the oral 55%. Assessments are performed by the professors who have led the course. The chosen methods of assessment are appropriate for the situations they are used. A lot of professors implement alternative teaching methods in their practice. Students should bring more feedback on courses.

The exams need to be organised according to the publicly available plan and take place on time, according to a previously carried out plan which is not a subject of random changes. The results of the exams should be made publically available (they find place on public newsboard of the university). In course descriptions oral and written exams are stressed.

The institution provides up to date information on its programmes. The information about the study programmes is available on the university's website, although it should be made sure the syllabus and information are publicly available. The first year students also undergo special introductory seminars that allow them to adapt easier.

Student advisory services haven't been noticed so far, thus it is highly advised to pay attention to its development. It is encouraged to establish Service for quality management education, guidance and career so the students can receive support after graduation. There is a clear perspective and motivation from the managerial level on student involvement. Student movement is encouraged and is ready to be supported. However there is no a certain and self-regulating body that will include and organise activists and student leaders to be an official representative for the student community.

Teaching staff offers frequent consultation hours that are available to students such as individual and small number laboratory classes. Students also work with methodologists who help them out throughout their study process.

There are not a lot exchange students due to the financial issues, but the university has established some connections with the universities in the USA and a Slovenian university. The University is looking for more opportunities for student exchanges, which is highly encouraged. Institution is involved in a few Tempus projects.

The study programmes include practical and theoretical parts of learning, although it is admitted, that theory is prevailing. Although the students are expressing a high level of gratitude towards the professors, some admit that there is a need of more modern and visual ways of transmitting information for better perception of the material. So it is highly advised to undertake series of trainings regarding student-centred learning taking into account the great potential and new ideas the younger generation can offer to improve the university.

The students may request transfer from one institution to another or switch faculties. The process is organised according to National System of Study Credits. The transfer can be made only for the second and following years. There were cases mentioned when students were transferred from one university to another or abroad.

3. Computer Science (BA, reaccreditation)

The bachelor level study programme in *Computer Science* has been accredited in May 2013 without condition. There was only one recommendation of improvement proposed:

- increase the share of mathematics in the study programme.

Conclusion: the recommendation is taken into account – the share of mathematics is now about 30% (it was about 25% from the volume of the whole study programme). In increasing the share of mathematics, the focus was on applied mathematics.

***

The following bases on the documents presented to the expert team, on the site visit and upon discussion with some academic staff members – Faton Berisha, Naim L. Braha and Menderes Gashi.

3.1. Academic programmes and student management

Although the mission statements of the University and the Faculty of Mathematics and Natural Sciences do not specify any subject area, the study programme corresponds implicitly to these mission statements because the university has ambition to "play a leading role in the educational, scientific, cultural, social and economic development of Kosovo". Therefore, as ICT has already penetrated into all sectors and all levels of contemporary society, a leading role assumes having a leading role in computer science as well.

Learning outcomes are partly formulated in quite a general manner. For example: "After completing the bachelor study programme of Computer Science students will be able to: Apply knowledge of computing, mathematics, engineering or science concerned with computer science and information technology." The expected learning outcomes should have been formulated in a more specific manner, allowing for decision on whether the expected competences of the graduates have been achieved or not.

The courses in the study programme can be divided into three groups: courses in computer science (about 40% of the volume of the programme), mathematics (30%), other (30%).

Although the SER says (page 195) that "The programme is arranged in 5 main areas: SW Engineering, Databases, Numerical computation, Management, Other", the colleagues responsible in preparing the SER claimed that in fact there are 3 focuses: Software Engineering, Databases and Numerical Computation.

About 70% of the graduates are employed and 30% have continued their studies on the master's level.

Concerning the structure of studies: Each student has to take 4 compulsory and 1 elective (out of 3 to 5) course each semester. The majority of courses have 6 credits, and will have 4 contact hours each week (2 hours for lectures and 2 hours for exercises, not depending on how theoretical a subject is, what are the needs for practical work in laboratories etc).

Concerning the content of the programme, the following remarks can be made:

1. Due to the fact that the share of courses of mathematics in the study programme is relatively big, it is unique in Kosovo and is in general acceptable. However, the link between the courses in mathematics and in computer science is weak. As the study programme is called *Computer*

Science, the courses in mathematics should first of all serve the courses in computer science, not so much to follow the intrinsic logic of mathematics. Currently some topics of mathematics that are necessary in computer science are only vaguely discussed (for example, number theory, formal and statistical modelling, data analytics).

2. The content of the courses in mathematics is partly overlapping. For example, **mappings** are considered in *Calculus* I, *Algebra*, *Elementary mathematics* and *Discrete Mathematics*.
3. Although there are a number of courses studying different aspects of databases, the course that databases should basically serve – information systems – is missing.
4. Some important topics of computer science are not reflected in the course descriptions (for example, cloud computing, device-to-device communication, i.e. Internet of things, IPR, licensing, agile development methodologies, robotics) while the necessity of some topics is questionable (for example, *Compilers* or *Matrix Theory*). Few important topics of the courses from the latter category could easily be integrated into the remaining courses for creating free space for necessary new courses.
5. Although software engineering was declared to be one of the focuses of the study programme, some fundamental aspects of SE are underrepresented in the course descriptions (for example, requirements engineering, interaction design, testing).
6. There is no internship in the study programme. Although there is a course *Practical Work*, it is in fact not obligatory as the students can take *Diploma Thesis* instead. It can hardly guarantee acquiring work experience in a real work environment.

Nevertheless, the *programme's quality, range and academic aims are appropriate to the academic degree***.**

Recommendations:

1. Revise the courses in mathematics to remove repetition and unnecessary content and focus more on the topics of mathematics (for example, number theory, formal and statistical modelling, data analytics) that are necessary in different courses of computer science.
2. Revise the courses in software engineering assuring that all phases of software development are properly covered, and that the students are trained in using the major software development methods and experience the full development cycle of software.
3. Consider the possibilities of including a course in information systems into the study programme.
4. Make the course *Practical Work* obligatory to the students.
5. Pay special attention to the emerging and important areas in further development of the academic programme (for example, Internet of things,

robotics, IPR, licensing, and agile development methodologies).

SER does not describe any overarching didactic concept. The teaching staff explained during the meeting that the teachers encourage problem solving and critical thinking of students during the studies.

Although the purpose of the programme is satisfyingly explained, the fundamental principles of the design of the programme were not revealed in the SER nor explained during the site visit. According to the explanation of participating teachers, similar programmes of other universities were taken as examples. In this relation the University of La Rochelle was mentioned. As a whole, the academic degree corresponds to the international standards.

As already mentioned, the majority of subjects have the size of 6 ECTS and weekly 2+2 contact hours (in total 15x4 = 60). Therefore, the number of hours for independent work of the students during a course is supposed to be 90; that gives the students' enough opportunity for independent study, reflection and analysis. However, due to the big amount of hours for independent study, supervision and support of independent work of students as well as the access to the literature should be guaranteed. It was explained during the site visit that the feedback to the homework bases on the students' personal initiative and that the homework is not regularly checked; on the other hand, attendance in the classes is checked. There are mid-term tests in the majority of courses; submitting a coursework or a project is required for some courses. Although the fact that the vast majority of courses have 6 credits may seem somehow artificial, the titles of the courses allow in its generality to ensure having adequate volume of the courses.

The number of hours spent in classes is adequate. However, the share of hours for exercises should be bigger, especially during the first study year where students should enhance and develop their habits and skills of independent work.

The content of teaching units is sufficient for the successful achievement of the programme's goals and outcomes. Concerning the teaching methods, the SER uses very short and standard formulations: "Lecture, discussion, homework, use of audio-visual means" or "Lecture, numerical exercise, computer laboratory exercise, consultations." and their modifications.

The admission criteria are the same as for other bachelor programmes, no specific conditions or requirements will be applied.

Student/teacher ratio is the most problematic aspect. Formally the student/teacher ratio is satisfactory: 16 teachers for 3*60 = 180 students. However, taking into account the fact that the teachers are involved in teaching of three other study programmes of the Department and on some study programmes of other departments, the student/teacher ratio becomes less favourable. Moreover, only 2 full-time teachers hold a degree from a computer science study programme, and none of them has a PhD degree. The staff members claimed during the discussions that there are three PhD candidates involved who are currently conducting their PhD studies abroad. This is why involvement of part-time teachers is relatively high in conducting courses in computer science.

3.2. Staff

There are currently 16 permanent and 9 part time academic staff members in the Department of Mathematics.

This relation (16:9) of full-time and part-time teachers is adequate. However, because of the administrative problems in the university's central administration, work contracts of some academic staff have expired back in 2014 and have still not been prolonged.

The qualification of the academic staff is to certain extent not appropriate (see above). On the other hand, meeting with the students allows the conclusion that the teaching is conducted on high academic and didactic level.

Recommendation: urgently hire a leading professor in computer science who would be able to form a sustainable and internationally competitive team of teachers in computer science.

3.3. Research and international co-operation

Some teachers have good publication records, but only in mathematics. There are very few publications in computer science (although some publications can be considered as belonging to the borderline of mathematics and theoretical computer science). The relations between the course contents and research of the teachers should therefore be rated as relatively weak.

International cooperation in research is conducted on individual level – there is no international research and development joint project in computer science. Concerning teaching, the university has participated in some Tempus projects. Many teachers have conducted some of their studies at foreign universities and still keep academic contacts with these universities.

Recommendation: find opportunities to be included into international consortia for applying to funds by international programmes, especially by Horizon 2020.

No evidence about student involvement in research and cooperation projects was presented. However, the students claimed that there are opportunities to be involved in R&D projects, especially on master level. They also provided some examples of the involvement.

3.4. Finances and infrastructure/space and equipment

The financing of the faculties and departments is extremely centralized – all expenses should be approved by the university's central government. Although the SER contained a table entitled "Budget and financing plan (calculation of revenues and expenditures) for the programme(s) under evaluation for at least three years, with data about the financial resources (including own capital)" (page 832), the teachers responsible for the SER have not seen it before and were not able to comment on it (except for the fact that the figures in the "Wages and salaries" row are adequate, but reflect the total salaries of the department, not the share of the study programme of computer science). There are almost no funds for supporting research and

development or for upgrading the labs.

The buildings and furniture are depreciated and need urgent renovation and replacement. The rooms and specialized infrastructure satisfy just the minimal quality requirements. There are plans for construction of a new building for the Faculty of Mathematics and Natural Sciences.

> ***Recommendation***: planning a new building for the Faculty should be accompanied by parallel planning of modern specialized infrastructure.

3.5. Quality management

The university has established internal quality assurance regulations and procedures. The programme was previously accredited in 2013. Concerning internal evaluation process, no additional procedures on top of the general university procedures were demonstrated. Currently the head of the Department – a mathematician – is at the same time the head of all study programmes of the department. It is clear that one person cannot be equally competent in different academic areas and is not able to devote themselves necessarily to the development of all study programmes of the department.

> ***Recommendation***: find a highly competent expert for a head of the Computer Science study programme and develop a strategy for advancing computer science at the faculty and in the whole university.

4. Study Programmes in Geography – General Considerations

The BA and MA programmes n Geography were accredited in 2010 and 2013. The following recommendations were made:

a) There is a need for more staff: in fact there has been a small increase, but more is needed.

b) Request for additional equipment for the completion of existing exercises and the development of new ones: the GIS mapping lab had been equipped with new computers but the next generation also has to be bought. Physical geography and planning also need some equipment.

c) Curriculum review has been done, but there are always changes to make. It is necessary to make adjustments every year to secure that it is up to date.

d) New books for the library: not much has been done.

e) Access to international journals: has been done partly and individually. Need for university policy and action here.

f) International cooperation has been increased and should be increased further.

g) Reduction of the number of new students: Nothing has been done here. It is necessary to increase and upgrade the space, the labs and the number of qualified teachers.

4.1. Introduction

The staff of the Department of Geography consists of 12 regular staff members. The competencies of the staff cover several geographical themes from geomorphology and climate competencies, landscape and forest geography, demography tourism geography and urban geography. Several members of the staff have competencies in GIS-research.

The number of publications from the staff is impressive and several publications are in English. When looking at the CV's of the staff it is obvious that the staff in geography practice a lot of services to society partly in the natural geography partly in social geography, they seems to be an important knowledge base for the civic society in Kosovo.

4.2. The academic programme and student management

The mission of geography is to educate bachelors and masters with a high employability and to deliver services to the knowledge based sectors of Kosovo. The study is composed of some obligatory courses and some elective courses and there is a clear description of the test and examination methodology.

All the courses in geography are well described with Course objectives, learning outcomes, teaching methodology and evaluation methodology as well as literature and tools used at the course. Course descriptions contain precise work hours, ECTS and learning outcome as well as description of different types of study activity.

All study activities are described with ECTS and the translation between ECTS is the following: 1 ECTS needs 25 working hours.

Geography has a clear description of the goals of the programme. There is a combination of lectures, exercises, seminars and colloquia. It is mentioned that the teaching of critical discussions in the classes are regarded as important.

By benchmarking with other universities it seems obvious that international standards are fulfilled and on top of this the staff has a comprehensive publication activity written in English and experience from jobs and visits abroad at other universities.

The staff consists of 8 full time and 4 part time academics. The staff/student ratio is around 1:30, the highest at the faculty. It is recommended to the faculty to increase the number of qualified academics at the geography.

4.3. Staff

The staff of the Department of Geography consist of 12 regular staff comprising 1 full professor 3 associated professors, 3 assistant professors and 4 teaching assistant and 1 lecturer. Seven of the permanent staff in geography is Dr.Sc., the others are Masters but are studying Ph.D. The high academic level should be secured due to the fact that the staff in geography has much international experience and a high publication rate. The level of course descriptions with learning outcome and the interviews at the meeting with the staff shows that the staff is engaged in the teaching quality. Most of the staff has spent some time abroad at other geographical departments. That is to

say that geography has an international network, partly in former Yugoslavia and Albania, partly also in Western Europe. When looking at the CV's of the staff it is obvious that the staff in geography practices a lot of service to society partly in the natural geography partly in social geography, they seems to be an important knowledge base for the civic society in Kosovo.

4.4. Research and international collaboration

The competencies of the staff cover several geographical themes from geomorphology and climate competencies, landscape and forest geography, demography to truism geography and urban geography. Several members of the staff have competencies in GIS-use GIS-research.

The number of publications from the staff is impressive; several publications are in English. The long list of publications and connections with universities abroad and with knowledge based activities in Kosovo shows research involvement both internationally and in Kosovo.

Connections with universities abroad and the benchmark exercise show this international involvement. Students are involved in research activities both in connection with the use of GIS and in the fieldwork as well as in planning exercises.

4.5. Finances and infrastructure

Permanent update to the GIS lab is necessary, otherwise are the skills of the academic staff will be obsolete. Geography has too little space for teaching and for work in the labs. This is partly due to hosting biology in a shorter period while the university is building new labs for biology. A quality lift in the rooms allocated to geography would also make it easier to attract researchers and students from the international partners of geography.

4.6. Quality management

In geography student questionnaires are used, it is important to collect information about the students view on the quality of teaching. It is important to use more than just a questionnaire for developing the quality of teaching, direct dialog between teacher and student is often very useful, collegial supervision and passing on the baton (a piece of paper on which a student writes the first sentence, and passes the paper to the student next to her and so on). Accreditation is conducted every third year.

4.7. General Recommendations

1. The rooms need urgent renovation. There is also a bigger need for small rooms for group work and seminars and physical geography and urban geography need labs.
2. Geography needs to permanently follow the latest development in GIS, that is to say that geography needs to have the possibility to buy new IT-GIS equipment.
3. Introduce yearly revisions of course descriptions.

4. Increase the research budget and participation in EU research projects.
5. Increase the number of foreign students and do some teaching in English.
6. Increase the number of well-qualified academic staff in geography.

5. Geography (BA, reaccreditation)

5.1. The academic programme and student management

Similar to other study programmes in the faculty, the study in geography follows the Bologna agreements: the Bachelor programme contains 180 ECTS.

The study programmes have clear and useful description of the objectives.

The ratio between the theoretical and practical part is 2:1.

The Bachelor degree is benchmarked with the geography study in Zagreb.

In the first 5 semesters in the Bachelor study, students have to choose only one elective course, in the last semester all courses are elective.

By benchmarking with other universities it seems obvious that international standards are fulfilled and on top of this the staff has a comprehensive publication activity written in English and experience from jobs and visits abroad at other universities.

The number of Bachelor students is 280 and the average graduation rate is 56%.

5.2. Recommendation

- Collect information of the occupation of bachelor graduates.

6. Geography (MA, reaccreditation)

6.1. The academic programme and student management

Similar to other study programmes in the faculty, the study in geography follows the Bologna agreements: the Master programme contains 120 ECTS.

The study programmes have clear and useful description of the objectives: fundamental for Bachelor and more specific for Master programme, depending on the direction of the Master studies.

The ratio between the theoretical and practical part is 2:1.

The Master degree is benchmarked with the study programme in geography at the University of Bristol.

At the Master study there are no elective courses in the first 3 semesters and the whole of the 4th semester is allocated to the Master thesis.

By benchmarking with other universities it seems obvious that international standards are fulfilled and on top of this the staff has a comprehensive publication activity written in English and experience from jobs and visits abroad at other universities.

The number of Master students is 21. The average graduation rate is around 100%.

6.2. Recommendation

- Collect information of the occupation master graduates.

7. Study Programmes in Physics – General Considerations

7.1. Introduction

After being reorganized according to the Bologna structure since the last evaluation in 2013 the Physics Department now has 2 distinct study programmes: 1) 3-year Bachelor programme in Physics, 2) 2-year Master programme in Physics.

The 3-year Bachelor in Physics programme is the only Bachelor in Physics programme in Kosovo prepares instructors for physics teaching in elementary and secondary schools in Kosovo. Besides preparing them for physics teaching in elementary and secondary schools it prepares students for the master programme in Physics.

The 2-year Master in Physics programme is the only Master in Physics programme in Kosovo preparing instructors for physics teaching at university institutions. Besides university jobs and Ph.D. studies the programme opens up opportunities for job at other research institutions, industrial institutions and radiological departments at hospitals.

7.2. Teaching

The teaching corresponds to international standards. However, it is perhaps diversified in too many different courses. If, again, physics is considered more as a way of thinking, and less as a list of sub-subjects, fusions of courses could be considered. At the same time the teaching burden of the small staff should be lowered.

The teaching structure with lectures and numerical and experimental exercises could be modernized by reducing the many lectures and, besides the numerical and (well-functioning) experimental exercises, instead including exercises in theoretical problem solving and project work.

Recommendation: increase the share of theoretical problem solving and project work in the study programme.

7.3. Research

As mentioned, the Department has a remarkable publication activity, taking the conditions into consideration. The activity has the four discernible lines: Material science, Theoretical nuclear physics, Detection of radioactivity, and Alternative energy and sustainability. The different directions of research are related to different members of the staff and different external contacts inside and outside Kosovo.

When increasing the staff in the future it is recommended to have major focus on one research subject in order to build up an international competitive research team. In order to teach physics, in contrast to many other sciences, it is more important to be trained "to think as physicists" than to be trained in a specific syllabus. Thus, choosing a research activity representing high-level research is of more importance than the specific content of the activity.

Researchers in Kosovo are missing a foundation of a kind to apply for supporting money to Ph.D. grants, research facilities etc. Such a foundation could be used to assist focusing processes.

Recommendation: decide on a research focus and form a competitive research team in it.

7.4. Staff

The Physics Department is still in a difficult situation, due to shortage of staff and equipment. It has less staff members than 3 years ago. However, the existing staff is doing a good and important job, considering that all physics teaching in Kosovo from elementary school to university institutions rely on them.

8. Physics (BA, reaccreditation)

8.1. The academic programme and student management

The programme corresponds to international standards for a Bachelor in Physics.

The books used are up to date, bearing in mind that nowadays the physics taught on a bachelor or master level is, in contrast to other sciences, not in rapid development. Many of the books are internationally used standard books written in English.

The courses consist of theory presented in lectures and accompanying practicing of numerical and experimental exercises. Nowadays, the Department is well equipped for the experimental exercises having 8 well-functioning laboratories covering the needs for experimental teaching for the bachelor and master degrees.

The content of physics is divided in parts and distributed on rather many different courses. Parts of the standard bachelor textbook *Fundamental of Physics* by Halliday, Resnik and Walker, is, e.g., used both in General Physics I, General Physics II and in Electricity and Magnetism, instead of following the general introduction to physics offered by such a textbook as course content.

The curriculum contains two English courses, addressing specific to computer science, but also addressed towards helping the students developing more professional English skills in general. This is strongly supported by the accreditation team and – judging from the site visit – also largely successful.

8.2. Staff

The teaching staff is highly qualified with a remarkable publication activity (partly in journals of international format), taking the difficult conditions into consideration.

While many younger scientists speak English at a quite good level, more senior members of the teaching staff have substantial problems communicating in English. This is a drawback for two reasons: first, it makes international cooperation very hard to achieve, and secondly, many textbooks used are in English, as is nearly all scientific literature.

The staff is very small. Physics and geography are still much smaller departments than mathematics, chemistry and biology, physics having still only 10 full time staff members.

8.3. Facilities

Laboratory equipment is suitable to perform the laboratory exercise parts of the courses. There are also a number of reasonable modern computers for students to use for their work. However, there are no real research laboratories. This makes the performance of experimental bachelor thesis and of course experimental research by the staff very difficult.

9. Physics (MA, reaccreditation)

9.1. The academic programme and student management

The programme corresponds to international standards for a Mater in Physics.
The programme offers both rather many obligatory courses and rather many elective courses, taking the small size of the teaching staff into account. A broad spectrum of different sub-subjects of physics to choose among is of course attractive for the students. But more important than being presented for many parts of physics is helping them learning "to think as physicists". And this is not necessarily achieved by being presented for many parts of physics.

9.2. Teaching staff

The teaching staff is highly qualified and definitely able to teach the master curriculum. Otherwise the discussion of this point under the heading "Bachelor in Physics" applies.

9.3. Facilities

The discussion under the heading "Bachelor in Physics" applies. Performing master theses locally suffers from the lack of research laboratories.

Recommendation: foresee setting up decent research laboratories in the new – not yet existing – building of the faculty.

10. Study Programmes in Chemistry – General Considerations

10.1. Introduction

The Department of Chemistry at FMNS has applied for re-accreditation of the following study programmes:

a) 3-year Bachelor in Chemistry
b) 3-year Bachelor in Engineering Chemistry
c) 2-year Master in Physical Chemistry and Inorganic Chemistry
d) 2-year Master in Organic Chemistry
e) 2-year Master in Analytical Chemistry and Environmental Chemistry
f) 3-year Ph.D. in Chemistry

and for one new accreditation

g) 3-year Bachelor in Food Chemistry.

The programmes a) to f) were accredited in 2013 with no specific recommendations.

***

The Chemistry Department offers undergraduate, graduate and postgraduate study programmes and pursues scientific research in organic, inorganic, physical, analytical and environmental chemistry, which is consistent with FMNS's mission statement. The research is of good quality and scientific results are published in esteemed international journals with high impact factors.

We found the Department to be full of enthusiastic, engaged and ambitious students, professors, assistants and other staff at all levels. Members of the Department demonstrate a true sense of pride in the institution and share collegiality and mentorship with one another.

However, there is a continuing and critical lack of financing which could soon escalate to severe throwback in the quality of teaching and research activities. This imminent loss of government funding calls for an urgent measures to be taken soon by establishing stronger connections with the industry and international institutions in order to fulfil the mission statements and to achieve defined goals.

As the study programmes are to a great extent using the same resources, we propose a common description, including the specifics of these study programmes.

10.2. Academic programmes and student management

The ongoing study programmes in chemistry are in line with the European standards and the relevant European universities and cover major aspects of modern chemistry teaching within the Bologna framework. All relevant documents are available and learning outcomes described. The ECTS norm is generally followed, although some variations in credits have been noticed depending on the learning programme. The programmes are in line with the similar ones at the University of Zagreb, Ljubljana and Berlin. The quotas seem appropriate, however some restrictions regarding the laboratory space and equipment have been observed. Objectives and learning outcomes of the programmes are documented and are conformed to international standards. Learning outcomes of some courses are given too generally and should be re-written. Different teaching methods are used such as lectures, seminars, exercises, practical training, consultations, students' presentations, each most appropriate to the subject matter. Listed books are similar to those used in other European universities but sometimes obsolete and should be updated. The number of professors is not adequate enough. In addition, the ratio of professors and assistants is somewhat high and new younger assistants should be appointed. Although the importance of economic needs with respect to study programmes are mentioned several times neither systematic market analysis nor expert opinion was presented. We encourage the department heads to do so in the near future.

The admission criteria and student progress are well monitored by the Department and the Faculty. During the site visit and meeting with students we received rather positive impressions on how courses are taught and students expressed their high appreciation and admiration for their professors and assistants who were found open to discussions and mentorships. The enthusiasm and positive energy of students are benefits of the Department of Chemistry that should influence further improvements in study programmes and quality of teaching. As a consequence, in the last period of three years a dropout rate has been reduced and we acknowledge this. On the other hand, it is surprising that there are not as many students at the master level as one would expect from the number at the bachelor level. We advise the Department to make a thorough analysis why master programmes are not as popular among students as the bachelor one and to make efforts for improvement in this respect. One thing that might help in attracting more students is promotion of the Department by organizing events to inform students about study programmes, science, job opportunities, etc. We also strongly suggest that the number of the students per each master programme should not be limited to 10 and that students in one master programme can enrol courses in the others.

The other positive thing that we found in discussions with students and teaching staff is the fact that students were involved in scientific projects even at the bachelor level. For practical courses we found that the laboratory space is cramped and equipment is rather limited. We believe that cooperation with industry may help to overcome some of the problems.

It is clear from the self-evaluation document and the site visit that the Department of Chemistry possesses required resources needed for reaccreditation of the existing study programmes.

10.3. Staff

There are no concerns about the scientific and teaching qualifications of the staff members, and it generally seems that they can definitely pursue their activities/responsibilities. However, although professors and assistants are fully engaged and enthusiastic in the academic work (which could be clearly recognised from the on-site interview with students), the coverage of the number of students by the teaching staff is insufficient. That should definitely be improved. In addition, the number of teaching assistants is too low compared to that of professors, which could be restrictive in terms of seminar and laboratory courses. It should also be stressed that in order to improve the teaching process and broaden the areas of chemistry taught to the students, the engagement of foreign professors/researches is strongly recommended.

10.4. Research and international collaboration

Despite the obvious lack of the appropriate modern scientific equipment, the level of the research activities going on at the Department of Chemistry is undoubtedly satisfactory. That is partly a consequence of the fruitful international collaborations of the Department professors (academic institutions in Zagreb, Paris, Maribor, Zurich, Jena etc.) which have led to numerous publications in leading, high-impact scientific journals, as well as indeed valuable oral and poster presentations at international conferences. As expected under the present circumstances, the researchers have oriented their investigations towards those which are not demanding with respect to expensive instrumentation. Although the studies in the other fields of chemistry are rather well established, a definite impression is that the research involving electroanalytical methods, which includes *e.g.* surface phenomena, metal complexation, environmental applications, etc., are of outstanding quality. In these fields there are also ongoing efforts to introduce very sound theoretical/computational investigations, which is in accordance with the demands of modern chemistry worldwide.

Chemistry is an experimental science and without new instruments, laboratory equipment, proper laboratory space and consumables the researchers can hardly meet high standards imposed by the worldwide chemical community. It is only the great enthusiasm of the researchers that keeps them performing high quality research in such a restricted environment.

As stated in the previous Evaluation reports, the above scientific activities should be supported by all means. The importance of the support can easily be rationalised by the well-known fact that the quality of teaching chemistry (and other scientific disciplines) is closely related to the quality of the teaching-staff research. We are of the opinion that there is no alternative for the Department and the Faculty but to think more broadly in seeking other sources of financial support. We have been told that the existing collaboration is mostly on an individual basis so we encourage the Department and the Faculty to establish strategic international alliances to seek for external funding.

We recommend that stronger links with industry and institutional international partnerships should be established.

10.5. Finances and infrastructure/Space and equipment

The main weakness of the Department of Chemistry lies in the fact that there is a serious lack of modern chemical instrumentation, which is, of course, closely related with a lack of finances. As a consequence, it must be really difficult to pursue the staff research (which is, as already mentioned, despite that of high level) as well as to organise the adequate student laboratory courses.

The laboratories are rather old-fashioned, but still functional. The same holds for the Department's library, whereby it should be noted that the access to the modern chemical literature/textbooks is quite restricted. However, in this respect the provided possibility of using at least *ScienceDirect* is surely of great importance to the researchers and students. This issue should be extended to the other scientific databases as soon as possible. There are several medium-size classrooms equipped by the digital projectors. The whole building is provided with an efficient ventilation system, and the other safety requirements are satisfactorily fulfilled.

As can also be seen from the previous Evaluation reports (2010 and 2013), the present infrastructure is sufficient, but at the borderline to carry out efficient research and teaching activities of the Department. Therefore, it is of utmost importance to improve the infrastructure, hopefully by a new building which would ensure the facilities required by the modern chemistry, as is the case in most European universities.

10.6. Quality management

Quality assurance is carried out by internal evaluations. There are several questionnaires used to evaluate quality of programmes, research and teaching such as questionnaires for students, academic staff and administration personnel and student evaluation for subject and teaching. We believe that students should be more involved in evaluating the teaching feedback and in the process of proposing improvements. We also recommend the Department and the Faculty develop a 5-years strategic plan for research, international collaboration and industrial partnerships.

10.7. General recommendations

We recommend the following:

1) Stronger connections with industry and international institutions should be established.
2) English courses for professors and assistants should be organized.
3) Number of students in master programmes should not be limited to 10 and students in one programme should be able to enrol courses in the others.
4) To organize public promotions of the Department to attract more students, especially at the master level.

5) To make improvements of the programmes and courses as indicated below.
6) To increase the number of teaching assistants.
7) To engage international professors/researches.
8) To develop and start implementing a 5-years strategic plan, with the emphasis on upgrading of the laboratories.

11. Engineering Chemistry (BA, reaccreditation)

11.1. Academic programmes and student management

The literature should be updated to modern books. The course objectives and learning outcomes of some courses are too general and should be given more precisely. The ratio between obligatory and elective courses is too high. More elective courses are needed, especially in the third year.

12. Chemistry (BA, reaccreditation)

12.1. Academic programmes and student management

The course in Biochemistry seems not to be comprehensive enough (two hours of lectures and four of exercises per week in only one semester). Extension is recommended.

13. Organic Chemistry (MA, reaccreditation)

13.1. Academic programmes and student management

The literature should be updated to modern books. The course objectives and learning outcomes of some courses are too general and should be given more precisely..

14. Physical and Inorganic Chemistry (MA, reaccreditation)

14.1. Academic programmes and student management

An important field of physical chemistry is missing in the programme, *i.e.* that of statistical thermodynamics, which is necessary for a deeper understanding of chemical thermodynamics both from theoretical and experimental points of view. It should be introduced either as a separate course, or as a part of the existing "Chemical thermodynamics" course. In addition, "Theoretical chemistry" should be an obligatory course for every physico-chemically oriented student. That would be in accordance with modern trends in chemistry in general, and also with the ongoing intention of some Department's researchers to strengthen this field in their investigations.

15. Analytical and Environmental Chemistry (MA, reaccreditation)

15.1. Academic programmes and student management

The literature should be updated to modern books. Evaluation methods are different for particular courses and should be harmonized. There is no obvious reason why some courses are obligatory and some elective. For example, *Environmental analytical chemistry* is an elective course while *Radiochemical methods* is obligatory; to our opinion the opposite would be more justified. A course related to speciation analysis is missing.

16. Chemistry (PhD, reaccreditation)

16.1. Academic programmes and student management

It is our impression that obligatory courses of the programme are too oriented towards analytical chemistry, and some other fields of chemistry are in this respect not covered at all. Even though this is not really a serious objection, we would recommend introducing more specialised sub-programmes, which is actually expected for PhD-level studies. The obligatory courses would in that case be closely related to the field of specialisation. On the other hand, students would still have an opportunity to choose the elective courses from any other area of chemistry.

17. Food Chemistry (BA, reaccreditation)

17.1. Academic programmes and student management

The purpose and scope of this programme are given in the self-evaluation document but are not met in the offered courses. The programme should be carefully planned with respect to economical needs in Kosovo, especially of food industry, and thorough market and job offer analysis is missing to justify the programme.

Furthermore, there are too many basic courses and just some related to food chemistry. The programme overlaps to a high extent with the existing Bachelor in Chemistry, with the same teachers involved. The knowledge and experience of the teaching staff in the area of food chemistry is not documented either. The students are supposed to learn mostly about basic chemistry and too little about practical applications in food analysis. Hence, we cannot recommend this programme for accreditation in its present form.

17.2. Recommendations

a) To re-design the programme according to our suggestions or

b) To adapt the bachelor programme to the master level and send it for accreditation as a master programme. In such a case the students who finished the bachelor studies in chemistry would have sufficient background to enrol in the master study in food chemistry which could then be more practically oriented.

For both options we suggest involvement of external teachers experienced in the programme matter, or establishing a joint study programme with some other appropriate institution(s).

18. Ecology and Environment Protection (BA, re-accreditation)

The Department of Biology has applied for re-accreditation of the study programme in *Ecology and Environment Protection* – Bachelor level. The programme was accredited in 2013 with a number of objections and recommendations.

18.1. Satisfaction of recommendations of the previous accreditation

Considering recommendations proposed by the previous evaluation panel (2013), it should be stated that some of the tasks have not been completely fulfilled, but an effort has been made in improving quality of the study programme. The effort should be continued, even intensify in the future and some tasks are expected to be fully accomplished by the next evaluation process, as mentioned below.

18.2. Academic programme and student management

In the self-evaluation report, the Bachelor study programme in *Ecology and Environment Protection* is correctly considered as comparable to that of the University of Maribor. At the same time, the Master programme is considered comparable to that of the University of Zagreb. However, at the University of Zagreb, the programme in *Ecology and Environment Protection* is offered solely on the Master level, following the Bachelor level in general biology subject. The evaluation panel would prefer to see that the same concept had been followed at the University of Prishtina. That option would enable much more rational use of the faculty resources including more research time for the faculty staff. Moreover, concerning the drop-out rate, which is significant, it has to be mentioned that the *Bologna Process* should facilitate students to complete at least the first study level (instead of completing nothing) and in that case the general biology subject is more appropriate to be accomplished at the Bachelor level, enabling more flexibility in tracing the ongoing career. Besides, by passing a few courses that make difference in comparison to the study of biology, bachelors could not be very proficient in ecology and environment protection. However, the panel members were told that they are very well accepted on the job market. Furthermore, the programme structure, like that of the Department of Biology, is not an exception - one can find examples, not only at the

University of Maribor. Taking all these into account, we have scrupled, so far, to force changes - the future will have shown whether specialisation towards ecology and environment protection, at the bachelor level, was justified.

18.3. Staff

The lecturers are overloaded by extreme teaching activity. A huge number of teaching hours per week/semester is certainly a burden that influences scientific research which is essential in developing competences of the university staff. The unfavoured ratio between the staff- and the student-number should not be deteriorated any further. Moreover, *status quo* must be conditioned by further improvement of the quality at the Department (proficiency in English, research-intensive environment, practical training conditions).

18.4. Research and international collaboration

Papers published in international and peer-reviewed journals were primarily taken by the evaluation panel as a merit qualifying professors for lectures in biology at the university level. The panel would prefer to see conference abstracts, even full papers published in conference proceedings, clearly distinguished from real peer-reviewed papers. However, a list of articles published recently (since 2013) in peer-reviewed journals has been recognised. Bright side, that should be highlighted, is a number authorships credited to doctoral students of the Department. An additional effort is expected in gaining international collaboration and research quality. Nevertheless, ten research projects, including international collaborations, have been established since the previous accreditation process, which is worth-mentioning step forward. To improve both teaching and research quality, at least short-term engagement of foreign professors, as well as abroad research training of the Department staff, would be strongly recommended.

18.5. Finances and infrastructure/space and equipment

Insufficient financial support has resulted in very bad conditions concerning laboratories at the Department of Biology. The practical work with students remains the main problem and does hardly meet standards in university education, particularly when considering that fifteen students attend a practical course. There is responsibility of Kosovar government to inject more funds in basic university infrastructure. Furthermore, the panel members are wondering if the funds were properly distributed to the academic community by respecting that natural sciences require significant financial support.

18.6. Quality management

Quality management is regularly performed by internal evaluations and international accreditations. Recommendations addressed by international evaluation panels are expected to be taken as much seriously as possible, resulting in ever higher achievement.

18.7. Recommendations

- Detailed practical course content is expected to be a part of each course syllabus. That relevant information would help the evaluating panel to consider activities encompassed by the practical training, and recommend improvement, if necessary.
- Further effort would be encouraged in making credit point calculation more consistent for similar (or pretty much the same) courses offered in *Biology* and *Ecology and Environment Protection* study programmes. That would contribute in harmonisation of the two programmes at the bachelor level and enable flexibility in switching specific track following the first study year.
- Some rearrangement in the study programme would decreased redundancy in courses (systematics) that *are* less essential in educating contemporary professional, characterised in gained problem-resolving capacity. On the other hand, course in *Molecular biology* would be welcomed for its enormous contribution in resolving ecological problems.
- Course-titles like *Invertebrate zoology* would be preferred over *Systematics of invertebrate*, etc.
- Progressive changes would be necessary in updating courses to ensure that the content of the biology lectures meets standards accepted recently.

19. Ecology and Environment Protection (MA, reaccreditation)

The Department of Biology has applied for re-accreditation of the study programme in *Ecology and Environment Protection* - Master level. The programme was accredited in 2013 with some objections and recommendations.

19.1. Satisfaction of recommendations of the previous accreditation

An effort has been made in improving quality of the study programme. It should be continued, even intensify in the future and some tasks are expected to be fully accomplished.

19.2. Academic programme and student management

The Master study programme in *Ecology and Environment Protection* brings mandatory (~60%) and elective (~40%) courses due to improve specific biological knowledge and combine biological aspects of ecology with basic knowledge in legislation, policy-making and economics of natural resources management. The general concept is logical and the study programme of that scheme is expected to be developed at the University of Prishtina.

19.3. Staff

The lecturers are overloaded by extreme teaching activity. A huge number of teaching hours per week/semester is certainly a burden that influences scientific research which is essential in developing competences of the university staff. The unfavoured ratio between the staff- and the student-number should not be deteriorated any further. Moreover, *status quo* must be conditioned by further improvement of the quality at the Department (proficiency in English, research-intensive environment, practical training conditions).

19.4. Research and international collaboration

Papers published in international and peer-reviewed journals were primarily taken by the evaluation panel as a merit qualifying professors for lectures in biology at the university level. The panel would prefer to see conference abstracts, even full papers published in conference proceedings, clearly distinguished from real peer-reviewed papers. However, a list of articles published recently (since 2013) in peer-reviewed journals has been recognised. Bright side, that should be highlighted, is a number authorships credited to doctoral students of the Department. An additional effort is expected in gaining international collaboration and research quality. Nevertheless, ten research projects, including international collaborations, have been established since the previous accreditation process, which is worth-mentioning step forward. To improve both teaching and research quality, at least short-term engagement of foreign professors, as well as abroad research training of the Department staff, would be strongly recommended.

19.5. Finances and infrastructure/space and equipment

Insufficient financial support has resulted in very bad conditions concerning laboratories at the Department of Biology. The practical work with students remains the main problem and does hardly meet standards in university education, particularly when considering that fifteen students attend a practical course. There is a responsibility of Kosovar society to inject more funds in basic university infrastructure. Furthermore, the panel members are wondering if the funds were properly distributed to the academic community by respecting that natural sciences require significant financial support.

19.6. Quality management

Quality management is regularly performed by internal evaluations and international accreditations. Recommendations addressed by international evaluation panels are expected to be taken as much seriously as possible, resulting in ever higher achievement.

19.7. Recommendations

- Detailed practical course content is expected to be a part of each course syllabus. That relevant information would help evaluating panel to consider activities encompassed by the practical training, and recommend improvement, if necessary.

- A bachelor in biology/ecology, loaded with *Molecular biology*, appropriate modern *Microbiology*, and refreshed courses in *Zoology* and *Botany*, is expected in the future to attend the Master level in *Ecology and Environment Protection*.

- The course in *Microbial ecology* would perfectly fit the master level study programme, instead of being a part of the bachelor one. The statement is, of course, strongly conditioned by significantly improved quality of the laboratory- and field-exercises.

- The master level of the study in *Ecology and Environment Protection* would be magnificently boosted by the course in *Environmental analytical chemistry*, offered by the Department of Chemistry. It is an absurd not to use resources of the neighbouring department, particularly when considering that chemistry is the strongest and the most developed field covered by the Faculty, matured enough to offer a study programme in both Albanian and English.

- The two courses, mentioned above, as well as some of the elective courses (*Planning and managing of conservation projects*; *Revitalisation of degraded ecosystems*; *System of environmental policies*) would be preferred as mandatory courses, instead of *Ethnobotany and phytochemistry*. Courses in *Ecogenetics* and *Radiobiology and genotoxicity* could probably be integrated, as well as *Animal ecophysiology* and *Plant ecophysiology*.

- In the final semester, ECTS allocation was encouraged by the previous panel report (2013) for offering just two elective subjects (5 ECTS each) and a 20 ECTS thesis – unexpectedly, the last semester is recently presented to encompass *Methodologies of scientific study* (6 ECTS) and an 8 ECTS master thesis (this makes 14 credits which raises the question of a mistake in the document)

20. Biology (BA, reaccreditation)

20.1. Introduction

Teaching and learning in higher education is a shared process, with responsibilities on both student and teacher to contribute to their success. A first step is to create the conditions in which the higher education sector gives parity of respect to both teaching and research. Quality teaching and learning has a broad-range, taking place in a research rich environment, where the subject matter is driven by the latest knowledge and research, delivered in a way that encourages students to develop academic literacy both subject specific and generic skills which they can apply immediately in the real world, especially in the labour market. In order to address general trends of changes in higher education, the University of Prishtina (UP) embraced the idea, that research and educational activities are measurable, allowing each institution to become progressively more successful in accomplishing its mission and more responsive to the changing environment. Therefore, analysis and professional judgment of the institution's educational quality, research activity, as well as its general effectiveness in achieving its mission was estimated in accordance with the standards (viewpoints) set by KAA. The applied viewpoints (elements and principles) for judging the qualities of education and research are detailed in the documentations of Guidelines for Experts, Code of Good Practice for Site-Visits and Criteria and procedures for the accreditation of programmes leading to the award of Doctoral degrees.

20.2. Academic programmes and student management

The Biology BA line offers full 3-year-education in biology. The study programme for the full time training (40 hours/week) offers complete education in biology without marking specialization. Each module (semester) has 5-6 subjects. Academic and examination results are quoted as credits according to the European Credit Transfer System (ECTS, however credit point calculation is still not consistent – see the previous expert report). The ratio of the elective and obligatory courses is well balanced 15% and 85% respectively. Based on the comprehensive tables of programme overview (Pages 257-259), most of the courses have practical parts (laboratory exercises/field work). The overall ratio between lectures and practices during the three year education period is approximately 1:1 (77 hours and 73 hours per week, respectively); however the practical course information is almost entirely missing from the Self Evaluation Report. Repeatedly, needless to say that, preparing detailed practical course description is particularly important in the modern experimental biology (see the previous expert report).

20.3. Teaching staff, publication activity and research facilities

Even though, the number of the engaged teachers and potential supervisors is quite impressive (8 full professors, 10 associate professors, 6 assistant professors and 5

research/teaching assistants), evaluation of the combined scientific merit of the Department resulted in rather modest outcome according to the Journal Citation Ranking and Quartile Scores (Q1-Q4 system). Comparing the number of courses offered, the teaching load is considerable, but does not exceed the critical level. The major problem of the Department of Biology is the very poor state of buildings and laboratories, as well as the lack of equipment to execute state-of-the art research. The indoor research environment is far from optimal. During the site-visit I cannot recognize any significant step forward in that matter.

20.4. Financial condition

Demand for higher education is high and rising in every EU country, however at the same time, higher education costs are rising, in part because teaching in higher education may be less amenable to capital substitution than activities in other sectors. According to the comprehensive table of budget and financing plan (page 827) it seems clear that, the available resources will not increase in the near future, which may cause a further backlog. Consequently, without enhanced opportunities for funding, financial situation of the faculty will become critical very quickly.

20.5. Recommendations

1. Recommendations by external evaluators over the past years are still valid at least to some extent.
2. Making efforts to modernize the learning outcomes and reduce contributions of lexical information.
3. Making efforts to modernize the general infrastructure.
4. The qualification principles for full-, associate- and assistant-professors have to be harmonized with the international standards.

21. Biology of Organisms and Ecology (PhD, reaccreditation)

21.1. Academic programme and student management

The Doctoral School of Biology was accredited in 2003. The head of the doctoral school is a university professor employed by the University as a full-time employee. The operation of Doctoral School of Biology is based on the activities of core members, supervisors and lecturers of the doctoral school (7 full professors, 10 associate professors and 1 assistant professor). The doctoral education programme is aimed at proposing a doctoral degree as the highest academic title in the field of biological sciences to be awarded within the course of the curriculum. The applicant must hold a Master's degree in a relevant field. Duration of the training is 3 years, and students must achieve 180 credits from different modules (modules I-III).

Since the establishment of the doctoral programme three years have passed, however there is no information in the Self Evaluation Report about the educational outcomes *i.e.* numbers of publications in international journals that cover the area of dissertations, number of passed doctoral examination, number of defended PhD dissertation etc.

21.2. Teaching staff, publication activity and research facilities

Even though, the number of the engaged teachers and potential supervisors is quite impressive (8 full professors, 10 associate professors, 6 assistant professors and 5 research/teaching assistants), evaluation of the combined scientific merit of the Department resulted in rather modest outcome according to the Journal Citation Ranking and Quartile Scores (Q1-Q4 system). Comparing the number of courses offered, the teaching load is considerable, but does not exceed the critical level. The major problem of the Department of Biology is the very poor state of buildings and laboratories, as well as the lack of equipment to execute state-of-the art research. The indoor research environment is far from optimal. During the site-visit I cannot recognize any significant step forward in that matter.

21.3. Financial condition

Demand for higher education is high and rising in every EU country, however at the same time, higher education costs are rising, in part because teaching in higher education may be less amenable to capital substitution than activities in other sectors. According to the comprehensive table of budget and financing plan (page 827) it seems clear that, the available resources will not increase in the near future, which may cause a further backlog. Consequently, without enhanced opportunities for funding, financial situation of the faculty will become critical very quickly.

21.4. Recommendations

1. Recommendations by external evaluators over the past years are still valid at least to some extent.
2. Making efforts to modernize the general infrastructure.
3. The qualification principles for full-, associate- and assistant-professors have to be harmonized with the international standards.
4. To create a small group for hunting and writing research grant proposal would be very helpful.
5. Without indicators, success of the doctoral study programme cannot be assessed.

22. General Comments

The Self-Evaluation Report was full of misprints and incorrect usage of terminology. There is plenty of text in the personal curricula that is not very relevant. It was explained during the discussions that the SER was initially composed in Albanian and then translated into English, without any additional proofreading by subject experts.

23. Recommendations to the Administration of the University

1. The university seems to base on a bottom-up initiative in starting new curricula, without necessary central coordination. This leads to dispersion of competence inside the university where teachers of the same subject are distributed between different academic units. For example, some biologists are working in the *Faculty of Mathematics and Natural Sciences*, and others in the *Faculty of Education*. Similarly, the courses in natural sciences and mathematics in the teacher training programmes are entrusted to the Faculty of Education. The ET recommends the university to investigate these structures and to make sure that there are good reasons for having academic experts in the same subject in more departments and faculties. Otherwise academics should be concentrated in one department, to avoid unnecessary rivalry between the units and to form sustainable and competitive teams.
2. High teaching competence in computer science is important not only for offering high quality teaching on ICT study programmes, but also for introducing courses in ICT in all study programmes of the university – ICT has already penetrated all sectors and all levels of contemporary society. Therefore, high-level digital competences are necessary for a wide variety of professions. Therefore the leadership of the university should make sure that access to IT equipment and learning how to use it are available for those who need it, both for staff and students. For that purpose, development and implementation of a strategy for building up a sustainable and internationally competitive academic unit in computer science may be necessary.
3. Assign resources for a completely new infrastructure (furniture and equipment) in planning a new building for the Faculty of Mathematics and Natural Sciences. Most of the equipment in current specialized labs is outdated and the labs resemble more school labs of the last century rather than university labs of 21st century.

24. Proposals for the Decision on Accreditation and Reaccreditation

The team of experts **recommend (re)accreditation** (with conditions specified in the specific study programme reports above) of all but one study programmes submitted for accreditation or reaccreditation by University of Prishtina as follows.

Reaccredit for 5 years the following study programmes:

1. Physics (BA)
2. Physics (MA)
3. Geography (BA)
4. Geography (MA)

Reaccredit for 3 years the following study programmes:

1. Computer Science (BA)
2. Chemistry (BA)
3. Engineering Chemistry (BA)
4. Physical Chemistry and Inorganic Chemistry (MA)
5. Organic Chemistry (MA)
6. Analytical Chemistry and Environmental Chemistry (MA)
7. Chemistry (Ph.D.)
8. Biology (BA)
9. Biology (PhD)
10. Ecology and Environment Protection (BA)
11. Ecology and Environment Protection (MA)

Not to accredit:

1. Food Chemistry (BA)

Annex: the lists of participants on the meetings

Programme Reaccreditation Procedure at Faculty of Mathematical and Natural Sciences, University of Prishtina

Date: 30th May 2016

Nr	Time	Activity	Participants
1	09:00-09:30	Meeting with the management of the Institution	1. Prof.Dr. Tahir Arbneshi- Dean of the Faculty 2. Prof.Asss.Dr. Teuta Pustina- Vice-Rectore for Quality assurance 3. Prof.Asoc.Dr. Naim Syla- Vice -Dean 4.Prof.Asoc.Dr. Agim Gashi-Vice-Dean 5. Dr.Sc. Kimete LLuga- Coordinator for Quality assurance 6. Besnik Loxha – Director of the Office for Academic Development
2	09:30-11:30	Meeting with responsible person for the study programmes *(Curriculum, teaching, researches, recommendations)*	Biology 1. Prof.Ass.Dr. Avni Hajdari 2. Prof.Ass.Dr. Halil Ibrahimi 3. Prof.Asoc.Dr. Avdullah Alija 4. Dr.sc. Kimete Lluga 5. Prof.Asoc.Dr. Hazbije Bojniku Physics 1. Prof.Asoc.Dr. Skender Kabashi 2. Prof.Asoc.Dr. Naim Syla 3. Prof.Ass.Dr. Shukri Klinaku 4. Prof.Ass.Dr. Sefer Avdiaj Geography: 1. Dr.sc. Arsim Ejupi 2. Prof.Asoc.Dr. Shpejtim Bulliqi, 3. Prof.Asoc.Dr. Florim Isufi 4. Dr.sc. Ferim Gashi Chemistry 1. Prof.Asoc.Dr. Bashkim Thaqi 2. Prof.Ass.Dr. Makfire Sadiku 3. Prof.Ass.Dr. Avni Berisha 4. Prof.Asoc.Dr. Naser Troni 5. Prof.Asoc.Dr. Majlinda Daci 6. Prof.Asoc.Dr. Musaj Paqarizi 7. Prof.Asoc.Dr. Sevdije Govori Mathematics 1. Prof.Dr. Faton Berisha 2. Prof.Asoc.Dr. Naim Braha 3. Prof.Ass.Dr. Menderes Gashi
3	11:30-12:30	Visit to facilities	
4	14:00-15:00	Meeting with academic staff	Biology 1. Prof.Dr. Qerim Selimi 2. Prof.Dr. Ferdije Zhushi- Etemi

			3. MSC. Naim Berisha <u>Physics</u> 1. Prof.Asoc.Dr. Sadik Bekteshi 2. Prof.Ass.Dr. Shukri Klinaku <u>Geography</u> 1. Prof.Asoc.Dr. Ibrahim Ramadani, 2. Dr.sc. Valbon Bytyqi <u>Chemistry</u> 1. Prof.Dr. Ismet Hashani 2. Prof.Dr. Fetah Podvorica 3. Prof.Asoc.Dr. Ramiz Hoti 4. Prof.Asoc.Dr. teuta Selimi <u>Mathematics</u> 1. MSc.Artan Berisha
5.	15:00-16:00	Meeting with students	<u>Biology</u> 1. Manjolla Kelmendi 2. Donika Shurdhani 3. Duresa Tolaj <u>Physics</u> 1. Yllka Kabashi 2. Milazim Zogaj <u>Geography:</u> 1. Nehat Haziri 2. Tropikë Agaj <u>Chemistry</u> 1. Bajramshahe Shkodra 2. Tenor Osmanaj 3. Petrit Nikolla 4. Egzontina Shabani <u>Mathematics</u> 1. Ardi Jusufi
6	16:00-16:15	ET and Coo., KAA consultation	
7.	16:15-16:30	Closing meeting with the management of the Institution	1. Prof.Dr. Tahir Arbneshi- Dean 2. Prof.Asoc.Dr. Naim Syla- Vice- Dean 3.Prof.Asoc.Dr. Agim Gashi- Vice-Dean 4. Dr.Sc. Kimete LLuga- Coordinator of Quality Assurance at FMNS 5. Msc. Jeton Hyseni, Secretary of FMNS