



PEER REVIEW REPORT

Doctoral Degree Programme

BIOLOGY F05110101

Provided by

National University of Mongolia

Ulaanbaatar
May 2019

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A. About the Accreditation Process

Name of the degree programme (in original language)	(Official) English translation of the name
Биологи	Biology
Date of the contract: Jan 2019 Submission of the final version of the self-assessment report: March 2019 Date of the onsite visit: 2-3 May 2019 at: Main Building of NUM	
Peer panel: T.Gan-Erdene (Institute of Chemistry and Chemical Technology, MAS) O.Baatartsogt (School of Animal science and Biotechnology, MULS) Jean-Marc Lobaccaro (UCA) Aleksandr Grigoryan (YSU) Tetyana Borovaya (KhNUE) Ruben Topchyan (ANQA)	
Representative/s of the MNCEA headquarter: J.Tungalag	
Responsible decision-making committee: Accreditation Commission for Programme of Natural Sciences	
Criteria used: MNCEA Doctoral Programme Accreditation Criteria, as of 02 Apr 2019	

B. Characteristics of the Degree Programme

Final degree (original/English translation)	Areas of Specialization	Mode of Study	Duration	Credit points/unit	Provided unit
PhD degree	Biology	Courses, research activity, activity of international publications	3 to 4 years (in theory)	30	

B. PEER REPORT FOR THE MNCEA SEAL

Criterion 1. DOCTORAL PROGRAMME OBJECTIVES AND CONTENT

The doctoral programme objectives are aligned with the institutional research policy and objectives, taking into account stakeholder expectations.

1.1. Programme design

Doctoral program is developed by meeting the common requirements of doctoral programs, and other special requirements by relevant stakeholders. Documentation of a doctoral program clearly states the procedures of plan, implementation and quality assurance of research projects completed during the program.

Evidence:

- The Doctoral School (DS) clearly defines the program: to follow (and to validate) courses, to publish international peer-reviewed articles, to defend the thesis.
- The courses are mainly theoretical.
- The difference between the various academic degrees (L,M&D) in terms of classes/courses are not clear.
- The competences that should be obtained after the 3 academic levels are confusing.
- Credit obtention is not clear throughout the document
- The grad student do not always know or understand the criteria that allow them to defend their thesis

Preliminary assessment and analysis of the peers:

- to increase the practical courses, and the general scientific (and up to date) research methodology. We recommend the PhD students to be pro-active during the class by presenting (in English) some research articles, even though not related to their research project. This will help them to open their mind.
- to clearly differentiate the program of classes between bachelor/master/doctoral levels.
- to increase the biology courses/classes in English performed by the teachers
- competences need to be identified for the doctoral level.
- In order to help the director to manage the doctoral school as well as any potential problems/tensions that could occur between a grad-student and a mentor, we suggest to establish a clear scientific council/committee of the doctoral school. This could be composed of: i) external members of the biology faculty; ii) external members of the faculty (officials from the city hall, from private companies) to help give more highlights to the doctoral school; iii) grad-students, elected by their mates.

1.2. Programme objectives

The programme has defined objectives in the form of intended learning outcomes covering knowledge, skills and competences to be acquired by students by the end of the studies. The objectives reflect the national qualifications framework, the institutional research policy and objectives and mission, expectations of the relevant subject community and the relevant stakeholders.

Evidence:

- The objectives are clearly designed. They classically encompass the whole continuum from the molecular biology aspects of the biology to the environmental level, with botany, agriculture and animal husbandry.
- The doctoral school does not show any clear objectives for the PhD: does the DS only form academic teachers, researchers, or does its objective focused to help the student find a job in any fields available such as academic as well as private companies?
- The big issue is that the grad-student are not full-time researchers, which could explain the huge discrepancy between the presented objective (3 to 4 years) and the reality (7 to 12 years)
- The grad-students do not know others and the various subjects they are working on.
- Grad-students are only in contact with the supervisor. There is no clear link with the DS.
- The critical mass of the doctoral school is low (27 grad-students).
- The links with the other scientific disciplines important for the biology are not clearly indicated: e.g. medicine-chemistry-pharmacology through the traditional medicine; geography-physics through the restoration and rehabilitation of the environment;
- Not all the supervisors are intensively involved in an active research activity

- Research grants and research subjects seem to be randomly chosen

Preliminary assessment and analysis of the peers:

- it is proposed to merge the 3 doctoral programs (biology, ecology, biochemistry) into one unique DS, which will be larger, stronger, with more external and internal visibilities.
- It should be important to increase the classes in the field of: * intellectual property, patent deposit, industrial rights. This point is important for the botany/traditional medicine field. The same for start-up creation. Not all the master student want to work as an academic. Increasing the possibilities of jobs would also allow to have more the candidate from a wide origin, which will give more diversities i the profile of the PhD, and in the future, this could make the link with private companies to sustain research through PhD grants.
- it would be important to have a longer view for the research program.
- It is suggested to establish “joint” PhD between biology and other fields of natural sciences? E.g. biology and medicine; biology and chemistry; biology and geography; biology and pharmacy...

1.3. Programme content

The curricular contents allow scientific scope and students to achieve the intended learning outcomes. The curriculum does have a logical sequence, avoids overlaps and contains a balance between theory and practice in line with the programme objectives. Where appropriate, the curriculum contains elective elements for students.

Evidence:

- The programme content is within the scope of the branches of biology targeted by the doctoral school (microbiology, botany, zoology, genetics and molecular biology).
- The grad-student have the possibility to give a feedback of the courses and the way the teaching is done
- Some points within the document and the discussion with the grad-students indicate that the courses take a lot of time.
- Some courses are difficult to take because they are at moments where the students are not present

Preliminary assessment and analysis of the peers:

- It is suggest to re-organize the courses in thematic blocks where the grad-students will have to choose only 2 courses in each blocks. Some of the blocks would be mandatory (English class, industrial rights, patents..., technical course), some of them optional.
- Number of courses to validate the possibility to defend a thesis should be decreased
- Grad-students who are going abroad for at least 2 to 3 month fellowship should be dispensed a significant amount of courses.

1.4. Syllabus

The programme documentation, including in particular course descriptions, contains relevant information about learning outcomes, pre-requisites, curriculum structure, teaching and learning method, expected student workload, credit award, assessment methods and criteria, recommended literature. It is regularly updated

Evidence:

- The description of the courses are quite clear
- However the organization of the classes is unclear
- Among the 77 courses, all but 4 four are in Mongol, which is understandable.
- **Preliminary assessment and analysis of the peers:** Courses should be reorganized in tehmati blocks with mandatory classes and optional ones (cf. Above comments)
- As already presented, i) intellectual property, patent deposit, industrial rights; ii) start-up creation; iii) outreach and/or dissemination/popularization classes should be proposed
- It would be important to give some of the disciplinary courses in English to allow the grad students strengthen their English level.

1.5. Special requirements for the programme

Intended learning outcomes and content of doctoral programs reflects the special requirements of doctoral programs by professional associations of a particular field.

Evidence:

- Very few non academic speakers are involved in the teaching.

Preliminary assessment and analysis of the peers:

- Could it be possible to ask non academic speakers to teach some specific part. This could also allow to establish official links with external environmental associations, forestry or animal husbandry professionals. This would give the opportunity, once again, to increase the possibility of interconnections between the academic labs, the grad students and the private companies.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 1:

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Criterion 2. DOCTORAL PROGRAMME IMPLEMENTATION

The institution have a structure, organization and legal environment to effectively implement the doctoral programme, aligned with the programme objectives and supports students’ achievement of the intended learning outcomes and research activities.

2.1. Admission

Admission criteria enable students to achieve the intended learning outcomes. They are fairly and consistently applied. The procedures adopted (choice of thesis topics and supervisors, type and amount of funding, etc.) are explicitly stated and fair.

Evidence:

- The procedure is clear. Grad-students are enrolled in a PhD program after a strong and competitive exam. The best are allowed to enter the program.
- Choice of the thesis topic and how the supervisor is attributed are not indicated
- None of the grad student has a specific “salary” to manage the PhD activity and to be a full-time research.

Preliminary assessment and analysis of the peers:

- Government and/or university should definitely decide to sustain the DS.
- The choice to increase the number of PhD by giving some funding opportunities, specially for the best students is definitively encouraged
- More connection should be developed with the private companies and the officials to get more fundings.

2.2. Doctoral student workload

Workload of independent and desk research is balanced, preventing from overload or shortcomings.

Evidence:

- The time really devoted to research is too low to be able to defend a PhD after 3 to 4 years of studies (as wanted by the DS).
- Few meetings with the respective supervisor are planned within a year
- No mandatory presentation of their work to the other grad-students is planned

Preliminary assessment and analysis of the peers:

- It is proposed to reduce the amount of courses necessary to defend the PhD
- To plan mandatory meetings one every year, with a written document after the presentation allowing a SWOT analysis that could be used for further analysis, the year after.

To present the results in English at least once during the thesis (3 to 4 years) in front of the other grad-students

2.3. Teaching and learning methodology

The instructional methodology is student centered, aligned with the programme objectives and supports students' achievement of the intended learning outcomes.

Evidence:

- The grad-students have the possibility to give their advice about the courses.
- Programme objectives are not clear
- No disciplinary teaching is performed in English

Preliminary assessment and analysis of the peers:

- To allow the young PhD, fluent in English, to give some courses
- To reorganize the proposition the courses

2.4. Supervision

The doctorate includes individual and regular follow-up of doctoral students, with clearly defined, coherent and transparent procedures for doctoral students and thesis supervisors.

Evidence:

- Supervisors have a really good level of publications
- To supervise a grad-student is a difficult process
- Some supervisors have not had an active research activity for many years

Preliminary assessment and analysis of the peers:

- Supervisors should have the experience to mentor student's research training for supervisors. It is thus proposed that the doctoral school have a view on the supervision process.
- We suggest also to have co-supervision by a senior mentor for young supervisors to give them the skills to become the best supervisors.

2.5. Research link, cooperation

Provisions are made at the level of the programme to increase the collaboration with national and international public and private organizations and higher education institutions. The doctoral programme have established links and partnerships with internal or external research departments and/or organizations. Teachers and doctoral students are involved in research teams.

Evidence:

- Many grad-students are performing fellowship abroad
- This point should be enlightened more clearly as it is really an opportunity.
- It is not clear whether NUM allows the defense in English in the case of co-tutorship thesis

Preliminary assessment and analysis of the peers:

- More abroad fellowships should be encouraged in order for the PhD student to see a different way of research management, to increase the various technical skills and to improve the English
- A co-tutorship document should be available as in many countries the PhD is limited to 3 to 4 years, and the amount of courses limited to 80 to 120 hours.
- An official contract between the director the DS, the grad-student and the supervisor should be signed, and a copy made available for the 3 parts of the contract.

2.6. Thesis defence

Explicit criteria for authorizing thesis defence (producing new knowledge, exploitation of results, validating teaching, mobility, etc.) are communicated to doctoral students and thesis supervisors. Organization rules for thesis defence (composition of the examination board and role of its members, convening notice, manuscript submission, etc.) are communicated to doctoral students and supervisors. These rules are defined in a fair and transparent manner.

Evidence:

- The defense is not allowed without a scientific paper in a “real” peer-reviewed journal (be careful to the predatory printers!).
- It is difficult for the grad student to know when and how they will/could defend this thesis
- The members of the commission seem too many (up to 15!!) and not all members are active in research.
- The organization of the defense is really complex (at least 3 different committees).

Preliminary assessment and analysis of the peers:

- The scientific council of the DS by the name of its director should give a significant advice to the scientific council of the NUM to allow the defense, without having all the tedious steps.
- The number of members of the committee should be limited to people involved in active research and in the field of the thesis.
- We recommend to have external and international reviewers to be part of the defense committee
- We recommend to allow the defense in English when a co-tutorship is accepted between two different countries, even though with substantial summary in the respective language. The duration of the thesis will be limited to 3 to 4 years in that case.

2.7. Graduation documents

Students are provided with a qualification certificate as well as a programme-specific Diploma Supplement in English. These documents provide information on the student's qualifications profile and individual performance as well as the programme learning outcomes, context, level and status of the degree programme with regard to its applicable education system.

Evidence:

- The document was not found by the expert in the document.

Preliminary assessment and analysis of the peers:

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 2:

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Criterion 3. DOCTORAL STUDENT ASSESSMENT AND ACHIEVED PROGRAMME OUTCOMES

The programme demonstrates the achievement of the intended outcomes. Assessment is fairly and consistently implemented in line with the relevant institutional policies.

3.1. Assessment of doctoral students

Student learning outcomes (knowledge, skills and competency) are systematically assessed with various approaches and methods. Assessment procedure and criteria is directed towards assessing in

a fair and transparent manner. Assessment resources including test banks in every course is developed and updated to assess students' knowledge, skills and competency.

Evidence:

- Every course is validated by a written exam
- The assessment is probably fair but the transparency is not that transparent.
- How the research work is processed is not enlightened enough

Preliminary assessment and analysis of the peers:

- Grad-students need more feedback form their progression. WE propose to establish a written to clarify the points that are good and those which need to be ameliorated.
- More milestones should be defined before the begining of the research program, and then regularly analyzed by a "following" thesis committee compsoed of the supervisor as well as external members of the department/or the research field.

3.2. Doctoral student progress and recognition of achievements

Criteria for credit award and student progression are transparent for all relevant stakeholders and are consistently applied at programme level.

Rules for the recognition of externally acquired competences and qualifications are applied at programme level.

Evidence:

- The visit committee was really impressed by the highly motivated grad-students, despite the long time of their PhD studies, the fact that they need to work at the same time, and they do not know when they will be allowed to defend their ork.
- The number of credit are indicated within the document even though it has been difficult to ascertain the fundamental reasons of the some.
- The PhD student paid for each credits, also for their own publications.
- PhD student who have spent some times abroad and published the work done in the other country have also to pay for this published work, while this has not been supported by NUM.

Preliminary assessment and analysis of the peers:

- Annual tuition fees re suggested instead of paying for each credit. From the external reviewers, it looks like the grad-students bying their diploma, which is obviously not true.
- Doctoral school should be more motivated to shorten the PhD studies to the classical westernized standards of 3 to 4 years.
- NUM should show its real motivation to form doctors by reducing the amount of money they ask to the students.

3.3. Doctoral student support and advice

The doctorate invites doctoral students to take part in supplementary scientific and/or professional events or actions, such as scientific events, conferences or panel discussions, etc. For each type of action, the methods for access, validation and evaluation, particularly by doctoral students, are defined and communicated.

Evidence:

- Some grad-students got the opportunity to go abroad for part of their research work. At this occasion they have the chance to participate to nternational conferences and scientific events
- Conferences and panel discussion are organized within the NUM by the DS and/or the deartent of biology
- 100% of the grad-student are not suported for their salary

Preliminary assessment and analysis of the peers:

- Increase the amount of scholarship, specially for the brightest students

3.4. Research funding

The doctorate is based on a transparent thesis funding policy, which is consistent with its objectives and the institution's scientific policy. The policy involves controlled management of this funding.

Evidence:

- The funding policy of the reaserch is not clear and/or absent.
- No specific funding is available
- The objectives of the institution to form PhD is not clearly defined.

Preliminary assessment and analysis of the peers:

- Ministry of reserach and higher education and NUM, through the DS, are suggested to really support the doctoral studies by increasong the amount of research fundings and PhD fundings.

3.5. Scholarship

Specific rules and regulation to specify the financial resource to fund doctoral students' studies and provide scholarships to them.

Evidence:

- The external panel understood that sholarships are attributed to some grad-students
- Some research subjects absolutely need sustantial efforts to equipe the lab with up to date and state of the art equipment.

Preliminary assessment and analysis of the peers:

- We suggest to keeping on this policy of scholaship attribution and to increasing it.
- More ressource funding should be attributed to the labs to increase their technical equipements.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 3:

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Criterion 4. TEACHING STAFF

Teaching staff are both sufficient and suitable in accordance with the characteristics of the doctoral programme, the scientific field and the number of students.

4.1. Teaching staff

The teaching staff members involved in the programme have the adequate qualifications with regard to the programme content and didactical competences to enable students to achieve the intended programme outcomes.

Evidence:

- Discussion with teaching staff cearly pointed out that it devoted to their mission of mentoring and teaching
- Numerous teachning staff members are shy to speak and to teach in English, while they have the skill to do it.
- The courses are organized in classical class, as what could be found for the lower academic degrees such as the Bachelor: grad-students are mainly statically following the "ex cathedra" class.
- Few grad-students are follwing the various courses. This is probably due to the fact that theyr too many classes and not enough grad-students following them.

Preliminary assessment and analysis of the peers:

- We propose to re-organize the courses in thematic blocks, some of them being mandatory, some of the optional, and to choose few courses among them.
- Courses and classes devoted to grad-students should be specific and mixed to bachelor and/or master students, to avoid any feeling of repetition.

4.2. Teaching staff development

Systematic professional development mechanism is in place to improve faculty's teaching and research skills and supervision skills of doctoral students.

Evidence:

- Supervisors who are not actively involved in research could however mentor PhD research projects.
- No specific diploma is necessary to supervise doctoral students
- No tutorship is available to help the young potentially mentors

Preliminary assessment and analysis of the peers:

- The DS should organize the tutorship to supervise the young supervisors
- Mentoring of each supervisor should be evaluated at the end of the doctoral studies, in terms of published papers by the grad-student, duration of the thesis, grants obtained to sustain the research project, oral presentation and/or attendance to international or national conference or seminar.

4.3. Links with research

Teaching staff members are involved in research relevant to the programme subject area. Results from research are fed into teaching and learning. Where appropriate, students are involved in research activities in the programme subject area.

Evidence:

- Staff members of the DS have good activity of publication
- However, titles of the publications, list of authors, name of the journals and Impact factor were not available.

Preliminary assessment and analysis of the peers:

¶ To increase the visibility of the DS, we suggest to make these informations publically available

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 4:

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Criterion 5. RESOURCES AND INFORMATION MANAGEMENT SYSTEM

Management information system to collect necessary resources, check resource allocations, and performance and make decisions of doctoral programs in order to achieve the learning outcomes and do research.

5.1. learning and research facilities

Laboratories and their equipments and library resources are suited to the subject area of the programme. Students have access to facilities and software necessary for the achievement of the intended learning outcomes, also during self-study periods.

Evidence:

- SiSi is a good information system to keep feedback.
- A lot of informations are present within the site.

Preliminary assessment and analysis of the peers:

- An attractive and specific site for the DS should done with: outreach of the doctors, lenght of the thesis, main results, actuality. All this will make the doctoral studies more attractive to the ptative future candidates.
- The main outcomes for the doctoral programs should be indicated on this dedicated Internet site as well as the academic or private perspectives, possible carriers...

5.2. Teaching and learning resource materials

Learning environment has necessary facilities and resources including textbooks for all courses, and teaching and learning materials. Hard and soft copies of necessary resource materials for research work are available for immediate accessibility.

Evidence:

- The library building is totally new
- PubMed ressource is rather limited and iy is thus difficult to have a direct access to the published publications. However, the grad-students understood the necessity to read articles and they usually ask the pdf file through ResearchGate.

Preliminary assessment and analysis of the peers:

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5.3. Information management system

The institution has in place an information management system for the collection and analysis of data. Data is collected, analyzed and used for quality improvement of the doctoral programmes

Evidence:

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Preliminary assessment and analysis of the peers:

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5.4. Transparent programme information

Information about the doctoral programme, including objectives intended learning outcomes, qualification awarded, duration, level, requirements, as well as information about the achieved programme outcomes, including graduates' career paths, are made transparent for all relevant stakeholders. It is regularly updated.

Evidence:

- These inforations are not publically available

Preliminary assessment and analysis of the peers:

- As indicated above, a specific internet site should be dedicated to the DS of biology (with the 3 fused doctoral programs in Biology, Ecology and Bichemistry)

5.5. Financial resources

The doctoral programme possess and maintain reliable financial resources from multiple sources to support the implementation, monitoring and improvement of the programmes.

Evidence:

- The financial ressources are not indicated.
- The financial support is not supporting the ambition of the NUM tp be among the 100 best university in Asia.

Preliminary assessment and analysis of the peers:

- More support should be obtained from the ministry, mainly by supporting PhD students.
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Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 5:

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Criterion 6. QUALITY ASSURANCE

The doctoral programme is subject to regular internal and external quality assurance mechanisms directed at continuous development with the involvement of stakeholders.

6.1. Internal quality assurance and enhancement

The programme and its components (including teaching material and facilities) as well as the quality of the involved staff members are regularly evaluated. The programme demonstrates that evaluation results are used for continuous improvements. All relevant stakeholders are involved in evaluation mechanisms.

Evidence:

- A lot of data are available but the analysis was really short
- No clear strategy was pointed out to understand how NUM and DS will allow the future doctors in Bology to be the future managers of the country
- No performance indicators are available

Preliminary assessment and analysis of the peers:

- the analysis of the data (duration, grants, numbers of paper, co-authrshipped papers) should be deeply performed for a better evaluation.
- Internal communication in the department should be increased to perform a real SWOT analysis ofthe DS
- Follow up of the Doctors should be done (career, salary, academic position or not...)

6.2. External recognition at national and at international level

Where appropriate, the programme is externally evaluated by relevant national or international organization with a view to facilitating the academic or professional recognition of the qualification awarded.

Evidence:

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Preliminary assessment and analysis of the peers:

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Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 6:

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B Additional documents

Before preparing their final assessment, the panel ask that the following missing or unclear information be provided together with the comment of the Higher Education Institution on the previous chapters of this report:

1. ...
2.

[In case no additional documents are needed not: „No additional documents needed“]

C Comment of the NUM (date)

The institution provided a **detailed/extensive/** statement as well as the following additional documents :

- [...]

OR

The following quotes the comment of the institution:

„...“

D SUMMARY ASSESSMENT OF THE PEERS:

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No	Criterion	Assessment	Notes
1	Doctoral programme objectives and content		
2	Doctoral Programme implementation		
3	Doctoral student assessment and achieved programme outcomes		
4	Teaching staff		
5	Resources and information management System		
6	Quality assurance		
	Summary Assessment		

Requirements

1.

2.

Recommendations

1.

2.

E DECISION OF THE ACCREDITATION COMMISSION (Date)

Assessment and analysis

The Accreditation Commission for Degree Programmes decides to award the following seals:

Degree Programme	Seal	Maximum duration of accreditation

A) Accreditation with or without requirements

Requirements

(MNCEE x.x)

(MNCEE x.x)

Recommendations

(MNCEE x.x)

E 1. (MNCEE x.x)