



UNIVERSITY OF ICELAND

Faculty of Life and Environmental Sciences

SCHOOL OF ENGINEERING AND NATURAL
SCIENCES

SELF-REVIEW REPORT



December 2020





UNIVERSITY OF ICELAND

Introduction

In accordance with the Icelandic Quality Enhancement Framework (QEF) at the University level in Iceland and the University of Iceland's Guidelines for the organization, schedule and process of institution-led review of faculties and interdisciplinary programs, the Faculty of Life- and Environmental Sciences (the Faculty), School of Engineering and Natural Sciences (the School), University of Iceland (the University), carried out self-evaluation during the spring and fall semester of 2020. The results are presented in this report.

A Self-Evaluation Committee (the Committee) was established in January 2020. The Committee members were:

1. Anna Dóra Sæþórsdóttir, Professor, Head of Faculty from July 1st, 2020, Chair
2. Arnar Pálsson, Professor, Head of Department of Biology
3. Gunnar Þór Jóhannesson, Professor, Head of Department of Geography and Tourism Studies until June 30th, 2020
4. Karítas Ísberg, representative of the undergraduate students in Geography and Tourism Studies
5. Kristín Elísabet Allison, representative of the graduate students within the department
6. Sigríður Valgeirsdóttir, representative of the alumni and industry outside academia
7. Sigurður Smári Davíðsson, representative of the undergraduate students in Biology
8. Snæbjörn Pálsson, Professor, Head of Faculty until June 30th, 2020, Chair
9. Zophonías Oddur Jónsson, Professor, Head of Department of Biochemistry and Molecular Biology

As part of the Self-Review, each student representative formed a discussion group to meet with the Social Sciences Research Institute to answer questions and discuss relevant matters. Each discussion group consisted of diverse selection of five to six students under the relevant graduate level.

The Committee used results of the data collection from University databases, student's satisfaction results and focus groups' results, along with its own discussion and ideas to develop actions for improvement. The University of Iceland Centre for Teaching and Learning reviewed the Faculty's course catalogue descriptions, especially learning outcomes, and provided the Committee with that review. The external industry representative attended committee meetings, including during the visit of the international external experts. The industry representative provided comments that have been incorporated into the report.

This material was remotely reviewed by the international experts on 20-24 October 2020 and met on-line with the Committee members. These were:

1. David Pyle, Professor of Earth Science at the University of Oxford (UK)
2. Nigel Mason, Professor of Molecular Physics at the University of Kent (UK)
3. Outi Savolainen, Professor Emerita of Ecology and Genetics at Oulu University (Finland)

Faculty Characteristics

The Faculty of Life- and Environmental Sciences (FLES) is one of six faculties within the School of Engineering and Natural Sciences at the University of Iceland. The Faculty is home to two departments: The Department of Biology (LIF) and the Department of Geography (LAN) and Tourism Studies (FER) and runs the Department of Biochemistry and Molecular Biology (LEF) in collaboration with the Faculty of Physical Sciences. The Faculty was founded in 2008, when the structure of the University was changed through the formation of five schools that replaced the previous Faculty structure of the University. Since then, the three departments have been together in one faculty.

The Faculty offers undergraduate study (BS) in Biology (LÍF), Biochemistry and Molecular Biology (LEF), Geography (LAN) and Tourism studies (FER) (Appendix 1, Table 1). Additionally, the Faculty awards graduate (MS) and (PhD) degrees in all those subjects except Biochemistry and Molecular Biology; students finishing projects in molecular biology will get a degree in Biology. In addition, the department awards MS degrees in Bioinformatics and in Environment and Natural Resources as part of an interdisciplinary program that is hosted within the Faculty. This program is only loosely connected with the department. It has already delivered its own self-review report and is therefore not included in this report.

The forum for research activities of teachers and students within the Faculty is the Institute of Life and Environmental Sciences, which was founded in 2011 (regulation on the Institute of Life and Environmental Sciences, University of Iceland no. 554/2011). The institute is divided into two laboratories: The Laboratory of Biology and a Research Center of Geography and Tourism. The Dean of the School appoints the board of the Institute. Four members are nominated at a Faculty meeting, the head of the Institute is appointed without nomination.

The administration of the Faculty is governed by the Faculty Meeting which is run in accordance with articles 17 and 18 of Regulation 569/2009. Daily administration is in the hands of the Faculty Head and three Department Heads. Faculty Meetings are held 2-3 times per year. The Faculty board which consists of the Head of the Faculty, the three Department Heads and the chairman of the Institute of Life and Environmental Sciences meets on a monthly basis. The departments meet regularly to discuss matters regarding teaching and research.

The Faculty has 35 academic teaching positions (28.05 full time equivalent, FTE) (Appendix 1, Table 2) in the main fields of Biology (14.95) and Geography and Tourism Study (13.1) with a gender ratio of 18 males and 17 females in October 2019. Out of the 119 sessional teachers, 62 are males and 57 females. The gender balance is thus over all very close to parity and in accordance with the Equal Rights Law of Iceland and the gender equality policy of the University. The skew towards male professors with a ratio of 15:8 is noteworthy, although all 5 associate and assistant professors are female. Almost all full-time Faculty members have doctoral degrees, but not all sessional adjuncts and teachers. However, they are all selected due to expertise and specialization in their respective fields. The age distribution of the Faculty (Table 3) is skewed as no faculty is under the age of 40. The age distribution in the Department

of Biology is of major concern. Most of the Faculty members have over 15 years of employment within the Faculty reflecting the low number of hiring and the age composition among the faculty members.

The number of students and their progress through the BS programme varies among the different programmes LEF262, LÍF276, LAN267, FER265 (Appendix 1, Table 3). The numbers of entrants in the BS programmes are considered satisfactory but are rather low in LAN. The retention rate in the BS programme in Biology has been low or less than 50%. The number of graduate students is satisfactory in LÍF but a higher number of PhD students (30) than MS students (20) is of concern, whereas in LAN and FER the numbers of PhD are 9 and MS 27. In addition, some MS students in the ENR programme graduate from the Faculty each year. A weakness in all the MS programs is limited number of courses offered which is due to limited number of students as well as limited number of academic staff able to take on more teaching than they already have. Several of the courses offered in the MS programs are also offered to BS students (M-courses) or have a 2 ECTS extension (F) to BS courses (G) (chapter 2). Graduate students who have finished the BS programme may thus have already taken the courses of interest or large part of them. The MS programs (LIF441 and LAN441) have experienced a reduction in the number of students and entrants, which poses difficulties of offering a full set of courses for these programs. The doctoral study program has a long tradition in Biology (LÍF561) but is rather new in geography and the first PhD student in Tourism studies is about to graduate (Table 9). A negative point is that only half of the students complete their doctoral degrees within 5 years. On 20 October 2020 the total number of students registered in the Faculty was 340, thereof 248 undergraduate students, 44 master students, and 48 PhD students.

Summary and Main Conclusions for the Faculty

Lessons learned from QEF1

Several achievements were reached in QEF1 but other targets were not met.

Regarding student satisfaction, the University has made a significant effort in investigating student retention rates and the School has used this information to emphasize the reception of new undergraduate students. However, as notified by the externals' report, the high dropout rate during the first year of Biology is of concern and needs to be dealt with.

The Faculty has worked on restructuring the BS programs which has succeeded to a different degree among the departments, and evaluation of the learning outcomes for the MS and PhD programmes needs to be conducted. It remains a challenge to solve the situation of the Molecular Biology and the Biochemistry department which is a joint program offered by part of the departments in Biology and Chemistry. In Biology, teaching of Microbiology has been strengthened with a new teacher and with courses offered to students in Engineering and in the master program in Environmental Sciences and Natural Resources. Aims to strengthen the master's programmes within the Faculty did not proceed as planned but the Department of Biology is now participating in a newly established master's programme in Industrial Biotechnology and this year, 2020, a collaboration started with the Marine and Freshwater Research Institute to offer a master programme in Aquatic Sciences. The Department of Geography and Tourism has initiated a Master specialisation in Natural Hazards and Arctic Tourism, the latter offered in collaboration with six foreign universities.

Despite efforts to increase the job satisfaction, as pointed out in QEF1, it did not increase since the last self-evaluation report according to recent surveys. Attempts were made to improve the "social life" by some activities as common trips, lunches and dinners which were well appreciated. Still, the low job satisfaction seems to be more dependent on external factors which are not under the control of the Faculty. They include high workload of current staff members and the inability of the faculty to recruit new teachers, allocation of University resources, both with regards to research units of individual faculty members and to the e.g., in form of research grants and housing.

Teaching and Learning

The Faculty has had a strong framework of quality review of its programmes over the years and continuously conducts reviews in order to improve the teaching. The Faculty has set a teaching strategy from QEF1. The Faculty receives and reviews annually surveys of BS, MS, PhD and graduated students. The Faculty annually reviews the course evaluations at a Department Meeting and with student representatives. The Faculty has set learning outcomes for most of its courses and its degree programmes in 2016, but these need to be updated as pointed out by the University Centre of Teaching and Learning. In Biology the teaching has a larger emphasis on taxonomy than often seen elsewhere, and a number of courses in chemistry which students have trouble relating to their interest in Biology during the first year, and which may contribute to high drop-out rates during the first year. The reviewers suggested it would be important to strengthen bioinformatics which is of growing importance as DNA analysis has been more commonly used in different disciplines, as well as increasing

writing and presentation skills both in Icelandic and English. Furthermore, although impressed by the bachelors student reports in Skemman, the reviewers wondered whether they exceeded the workload or the numbers of credits acknowledged for the work.

The Faculty has strengthened the welcoming and orientation of new graduate students and improved support for international students. The Faculty has set written rules for doctoral evaluation and monitors doctoral programmes with a Faculty Graduate Studies Committee. The next steps include development of a PhD student manual, formal guidelines for PhD committee members, better develop the biology graduate students retreat (probably as e-meeting). We plan to re-evaluate the MS programmes in biology (including bioinformatics) and explore the development of further specializations. In addition we plan to improve systems for exchange and internship students. These steps were also emphasized in the report by the external experts who suggested a more formal structure of the graduate studies. In the same report they also pointed out there are too few students in the master's programme in Bioinformatics and they suggested that it could be arranged differently within the University.

Management of Research

The Faculty set a research strategy in 2019. The research emphasis areas reflect the wide expertise of the faculty members which are hired because of the teaching duties following the BS programs in the different departments. The Faculty has and intends to maintain a research specialty and strength which spans the main fields of the study. The Faculty has developed a five-year recruitment plan for new Faculty members based on this strategy and considering also the plans for developing new MS programs. Unfortunately, the Faculty has not been able to announce new positions despite the fact that several teachers have or are about to retire (despite carefully laid plans in the QEF1 report). The situation is improving this year as two positions have now been announced in Biology, but several teachers are retiring in 2021 and 2022 and Geography and Tourism seriously needs permanent teachers instead of temporary adjunct fellows. As suggested by the external reviewers, there is also a need to recruit faculty members of the Biochemistry and Molecular Biology, which teaching and research could be strengthened with collaboration with School of Health Sciences.

In terms of research output (Appendix 1, Table 4), as measured by the evaluation system of the public universities in Iceland, the Faculty has remained steadily productive, with a similar average as the School and somewhat higher than the University average.

Faculty are encouraged to conduct research, supervise graduate students, apply for national and international grants and engage with the wider society. In response to discussion within the University, the faculty does not see scorecards and new management approaches to research as beneficial instruments to promote the quality of work and outputs. As was noted above, then the Faculty brings in 29% of the national research funds that the School receives. But our share of the international funds is lower, and something we aim to improve.

The infrastructure of the faculty are housing and equipment for teaching and research. The housing issues are quite pressing, and the department of Geography and Tourism should be combined in the same building. The teaching facilities are rather good, but there is room for improvement of specialized facilities for research. This includes research labs for GIS (also

pointed at by the external reviewers), plant and aquatic organisms. Requirements of facilities needed by new faculty members hired in the next couple of years needs also to be considered. As noted by the External's report, there is room for more collaboration with other faculties, institutes or companies, in terms of sharing expensive and specialized laboratories and equipment.

Main conclusions

Challenges of the Anthropocene underscore the importance of the subjects taught and studied at the Faculty of Life and Environmental Sciences. Thus, the significance of the Faculty should be increasing. In many ways this is certainly the case, as reflected in certain successful teaching programmes, high quality research, a high success rate in attracting research funds especially within Biology and Molecular Biology and a high publication rate in high quality journals and books.

However, the Faculty is facing various challenges:

- Many Faculty members will retire in the next few years and due to an unfavorable financial distribution model, the Faculty has until recently not been allowed to hire new staff members. This has various consequences:
 - A negative financial cycle has started as Faculty members are supposed to bring some part of the money into the system via grants and research output. Having fewer Faculty members results in fewer applications and therefore fewer grants.
 - Due to the difficult financial situation in the Faculty and due to a heavy workload on Faculty members, courses have been cut down. While this reduces the workload, it also leads to less money for the Faculty and reinforces the negative financial cycle. In addition, the selection of courses and thereby any specialization for students is very limited with the effect of making the programmes offered less attractive for prospective students.
- As pointed out by the External's report (Appendix 3) new hiring presents an opportunity to evaluate the curriculum and research directions of the faculty.
- Teaching the subjects of Biology and Biochemistry and Molecular Biology is very expensive due to laboratory work. The University's financial allocation rules do not cover the costs completely, therefore more collaboration with other faculties, institutes and companies would be beneficial.
- Too much workload on remaining Faculty members leads to stress, dissatisfaction and some faculty members have had extended periods of sick leave due to work related stress.
- Curriculum development:
 - As pointed out by External's report, "there is a need to review the whole teaching programme from Bachelor to PhD as an entity, to determine what should be delivered at what point and reference each "exit point" to job market and international norms". Revision of learning objectives for all programs in undergraduate and graduate studies is on the agenda within all departments.

- The Department of Geography and Tourism has developed a 60 ECTS Diploma in Hospitality and Tourism, whose implementation rests on investment in human resources. This program is likely to increase the recruitment of students to the program
- Despite the importance and interest in strengthening the Master Programs it has not been done in significant way since there are few Faculty members and few students. Financial restraints have furthermore limited the number of courses being offered. Steps are being taken but the ambition of the faculty to respond to University policy is greater than present activities manifest.
- The drop out of first year students is too high in Biology, and Biochemistry and Molecular Biology. Reorganizing the first-year course curriculum and increasing practical lessons in the laboratory, and field trips should be considered in order to solve this.
- The basis of the scientific methodology should be expanded in Biology, and Biochemistry and Molecular Biology.
- Revision of the learning outcome of the programmes should consider how the essential professional skills are met throughout the study, such as interpersonal skills, oral and written communication skills, and problem solving skills including scientific inquiry.
- Housing facilities have become limited and therefore part of the Faculty members in tourism studies were relocated to another building. This in turn has had a negative effect on collaboration within the Department of Geography and Tourism as well as communication and interaction between those transferred with their colleagues. This has led to a decrease in moral and job satisfaction. Reuniting the department is thus a priority.
- Some improvements need to be done regarding facilities and infrastructure:
 - Bigger and safer laboratory space for soil and paleoecology which process has already been initiated
 - Facilities for fish- and marine biology by adding aquaculture facilities for freshwater organisms.
 - By building a phytotron allowing precise environmental control would support ecology and botany research
 - Facilities for plant cultivation under controlled light, heat and humidity for photosensitive bacteria, algae, biocrust, lichens and moss.
- The Faculty of Life and Environmental Sciences has a very broad scope, spanning the natural sciences with DNA and molecules to social sciences and humanities with topics such as the tourist experience and business of the tourism industry. This means that many Faculty members in the different departments have little in common when it comes to teaching and research subjects. However, their work partly overlaps in certain fields, for example within physical geography, ecology and microbiology. In addition, GIS is a particularly useful mapping tool not only for tourism and geography but also for certain work in biology. Attempt have been made to coordinate the subjects by creating common research projects across the whole Faculty but so far that has not been successful. At the same time courses which relate to geography,

tourism and partly to biology are being developed within the ENR programme. However, these courses are not part of the Faculty. Similarly, instead of strengthening Molecular Biology within the Department of Biochemistry and Molecular Biology the School of Health Sciences has been more successful due to more favourable financial distribution model. The Department of Geography and Tourism Studies has concluded that it would like to explore closer collaboration and synergies with the ENR programme.

Follow-up Processes

The implementation of the Action Plan will be a standing item at Faculty Meetings. It will be reviewed formally every year at a Faculty Meeting and the upcoming year's actions prioritized and adjusted based on experience.

The Faculty Head reports formally to the School Dean on the status of the implementation and plans for the next year, together with other relevant QA matters no later than 1 December and this will be followed up by the School Board. The School Dean will subsequently make use of this report in a status report for all Faculties in the School, which will be submitted to the Quality Committee no later than 15 January. The Quality Committee writes a short report to the Rector no later than 1 February, which will subsequently be discussed in a meeting between the Chair of the Quality Committee, the Director of Quality Management and Rector, Vice-Rectors, Deans of Schools and the Managing Director of the Central Administration.

Appendix 1. Key Figures.

Table 1. Overview of present Study Programmes within the Faculty

Name of Study Program	Cycle ¹	Degree	Credits (ECTS)
Department of Biochemistry and Molecular Biology			
LEF262 Biochemistry and Molecular Biology	1.2	BS	180
Department of Biology			
LÍF267 Biology	1.2	BS	180
LÍF441 Biology	2.2	MS	120
LUF441 Bioinformatics	2.2	MS	120
LÍF561 Biology	3.0	PhD	180
Department of Geography and Tourism Studies			
LAN267 Geography	1.2	BS	180
LAN441 Geography	2.2	MS	120
LAN561 Geography	3.0	PhD	180
FER265 Tourism Studies	1.2	BS	180
FER442 Tourism Studies	2.2	MS	120
FER561 Tourism Studies	3.0	PhD	180

¹ See National Qualification Framework for Higher Education No. 530/2011.

Table 2. Faculty members as of 1 October 2019 and sessional teachers 2018, number (No.) and full time-equivalent (FTE).

	Male		Female		Total	
	No.	FTE	No.	FTE	No.	FTE
Professors	15	12.47	8	8.00	23	20.47
Associate Professors	0	0.00	3	2.49	3	2.49
Assistant Professors	0	0.00	2	2.00	2	2.00
Adjunct Lectures	3	1.74	4	1.35	7	3.09
Total	18	14.21	17	16.84	35	28.05
Sessional teachers	62	4.68	57	3.20	119	7.88

Table 3. Total number of students, number of entrants, retention rate for first year, and completion rate (4 year mean 2015-2018). Numbers are presented for BS and MS students separately. Programme labels: LEF Biochemistry and molecular biology, LÍF Biology, LAN Geography and Fer Tourism, numbers refer to the different levels, see Table 1.

Programme	No. of students			No. of entrants ³	Retention rate	No. of graduates	Completion rate ⁴
	Total no.	Full time ¹	Part time ²				
LEF262	105	64	26	41	45	16	91
LÍF276	125	77	32	34	34	22	79
LÍF441	20	9	6	5	93	6	80
LAN267	46	30	12	11	66	7	63
LAN441	12	6	5	3	50	5	65
FER265	199	141	44	51	71	51	84
FER441	15	6	6	5	41	3	82
LÍF561	30	21	-	5	-	6	51
LAN561	5	4	-	1	-	1	100
FER561	4	1	-	1	-	0	-

¹ > 22.5 ECTS completed. For Ph.D. students > 1 ECTS completed.

² 1-22 ECTS completed.

³ For all programmes except Ph.D., no. of students completing at least one examination in first term.

⁴ 2-year rate for diploma, 4-year rate for B.A./B.S., 3-year rate for M.A./M.S., 5-year rate for Ph.D.

Table 4. Research output of Faculty members, based on the Evaluation System for the Public Universities in Iceland, expressed by mean total research points (A) and mean research points from peer-reviewed publications only (B) per FTE.

	2015		2016		2017		2018		Mean	
	A	B	A	B	A	B	A	B	A	B
Faculty	39.6	27.6	40.6	29.5	35.7	20.9	35.1	25.3	37.8	25.8
School	43.4	32.4	39.0	29.7	39.1	27.5	39.2	30.9	40.2	30.1
University	37.8	24.7	37.1	25.1	34.8	22.8	37.8	26.4	36.9	24.8

Appendix 2. Action Plan for Teaching and Learning and Management of Research in QEF2

	Actions	Deliverable	Deadlines	Responsible party
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1. FACULTY LEVEL

Ch. 1.3	Faculty Characteristics			
1	Hire full-time faculty in:			
1a	Invertebrate zoology	Hiring	2020	Head of Faculty
1b	Aquatic biology/ freshwater, marine or fish biology	Hiring	2020	Head of Faculty
1c	Sustainability and responsible tourism	Hiring	2021	Head of Faculty
1d	Hospitality and service management	Hiring	2021	Head of Faculty
1e	Natural hazards and society	Hiring	2021	Head of Faculty
1f	Molecular biology/microbiology	Hiring	2021	Head of Faculty
1g	Plant physiology	Hiring	2021	Head of Faculty
1h	Molecular biology	Hiring	2021	Head of Faculty
1i	Microbiology/ molecular biology*	Hiring	2022	Head of Faculty
1j	Tourism and geography	Hiring	2022	Head of Faculty
1k	Physical geography	Hiring	2023	Head of Faculty
1l	Plant biology	Hiring	2023	Head of Faculty
2	Find solution for the administrative organization of Biochemistry and Molecular Biology within the School	A unified Biochemistry and Molecular Biology Department. Teachers not associated with two departments		Dean of School
3	Recombine staff members in the Department of Geography and Tourism in the same building	Improved office space utilization in Askja or move to another building (e.g. Gróska)	2021	Head of Faculty
Ch. 1.4	Academic Vision			
1	Foster international collaboration	Mobility grants, publications, international collaboration	Ongoing	Faculty Head
2	Improved presentation of departmental activities on the institute web site. Also add new paper publications / mini press releases	Get the school's administration employees to enter events into www.luvs.hi.is calendar	2021	Faculty Head / Institute Head

3	Social media account(s) for each unit (biology / geography-tourism)	Encourage student unions/MS/PhD students to present social material	2021	Faculty Head / Institute Head
4	Increase international revenues	Submissions of applications for foreign research grants e.g. for Horizon Europe research grants	2022	Department Head
5	Further exploit the country's unique opportunities for basic and applied research	Increase collaboration and research projects	Ongoing	Faculty Head
Ch. 1.5	Student Support			
1	Access to study rooms for BS & MS students	Rooms for students in Askja	2021	Faculty head
2	Improve orientation of PhD students. Consider a mentor programme	Orientation	Ongoing	Graduate committee of Faculty
3	Write a graduate manual (with checklists) for graduate students and supervisors	Manual	2021	Graduate committee of Faculty
4	Ensure PhD student's timely awareness of mid-term evaluation	Standard emails sent regularly	Ongoing	Faculty head and Graduate committee of Faculty
5	Improve electronic access to peer reviewed journals and books	Increased number of accessible academic journals and books	2021	Faculty head / Institution Head

2. DEPARTMENTS AND STUDY PROGRAMMES

Department of Biochemistry and Molecular Biology

2.2 LEF262 Biochemistry and Molecular Biology (BS 180 ECTS)

Ch.	Students			
2.2.1				
1	Reorganize the structure of the Department of Biochemistry and Molecular Biology within the School	Independent BMB department with teachers and courses (not only students)	2021-2023	Head of Faculty
2	Evaluate the outcome of the student workload assessment	A report of student workload analysis	2021	Head of Department
3	Collaborate with Heads of Departments of biology and chemistry on means to improve student satisfaction	Improved student satisfaction	ongoing	Head of Department
4	Recruitment of teachers in molecular biology	Recruited teachers	2021	Head of Faculty

5	Consider qualifying entrance examinations or preparative classes for first year students	Qualifying exam or preparative summer class	2022	Head of Department
6	Hold regular meetings with BS students	Regular meetings with BS students	Ongoing	Head of Department
7	Facilitate the search for BS projects	Web portal for potential BS projects	2021	Head of Department
Ch. 2.2.2	Teaching and Learning			
1	Update and improve the use of learning outcomes	Updated learning outcomes	2021	The Head of Department
2	Develop a curricular mapping of LÍF108G – Diversity of Life	Curricular mapping for LÍF108G	2021	Head of Department
Ch. 2.2.3	Coordination between teaching and research			
1	Consider establishing a MS programme in BMB and microbiology (possibly with the Medical department)	Revived discussions with School of Health Sciences or an outline for a programme within BMB	2022	The Head of Faculty

Department of Biology**2.3 LÍF267 Biology (BS 180 ECTS)**

Ch. 2.3.1	Students			
1	Restructuring the programme with respect to learning outcomes and workload	Improved programme	2022	Head of Department
2	Add field trips and group assignments in first year	Field trips	2021	Head of Department
3	Consider means to improve the ratio between enrolled students and students completing examinations	Strategy for improve retention	2021	Head of Department
4	Do a regular survey of bachelor cohorts to study dropout and satisfaction	Survey output	Ongoing	Head of Department
5	Consider offering more elective courses on biannual schedule	Courses on biannual schedule	2022	Head of Department
6	Consider qualifying entrance examinations or prepare first years better for further studies	Test	Ongoing	The Dean of School

7	Hold regular meetings with BS students (divided by years)	Meetings	Ongoing	Head of Department
8	Survey of graduated students (about programme, where they are at, what was good/bad)	Result of survey	2022	The Dean of School
9	Improve formal structures around international internship/exchange student's acceptance and evaluation (including orientation)	Guideline for these students	2022	Head of Department
10	Explore the opportunity to generate course in English for exchange or internship students	Course in English on Biology of Iceland or other topics	2022-2023	Head of Department
Ch. 2.3.2	Teaching and Learning			
1	Improve exposure of faculty to more teaching methods	Training in teaching	2021	Head of Department
2	Increase student interest and satisfaction with first year courses by increasing fieldwork and practical assignments	More fieldwork and assignments	2021	Head of Department
3	Carry out curriculum mapping, update learning outcomes of courses and the programme	Updated learning outcomes and implement their practical use	2022	Head of Department
4	Hold a meeting with external stakeholders, i.e., graduated students, institutions and industry, on the programme and learning outcomes	Summary of meeting	2022	Head of Department
5	Improve writing skills in first and second year	More essays in 1 st and 2 nd year	2022	Head of Department
6	Evaluate Math course placement in 1 st semester. Consider moving later in curriculum or implementing a general Science skill course including basic math skills instead.	Restructured curriculum	2023	Head of Department

7	Introduce and present potential Bachelor projects	Meeting with 2 nd year students in semester 3; Make online portfolio of potential projects	Ongoing	Head of Department
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2.4 LÍF441 Biology (MS 120 ECTS)

Ch. 2.4.1	Students			
1	Better integrate MS students at other institutions	Tighter community of MS students	Ongoing	Head of Department
2	Develop better connections with other related MS programmes (like Environment and Natural Resources and industrial biotech)	Better connections with directors of related MS programmes	Ongoing	Head of Department
Ch. 2.4.2	Teaching and Learning			
1	Make biostatistics mandatory	Curriculum change	2021	Head of Department
2	Develop and advertise the new Marine and freshwater MS program	Registered students	2021	Head of Department
3	Define learning outcomes for MS biology programme	Learning outcomes	2021	Head of Department
4	Consider developing separate MS programs or specialization in molecular biology and arctic biology	New programmes or specializations	2022-2023	Head of Department
5	Revise the program with input from MS students and external stakeholders	Summary of meeting with stakeholders	2022	Head of Department
6	Provide more graduate level courses – projects or theory courses	More courses	Ongoing	Head of Department
Ch. 2.4.3	Coordination between teaching and research			
1	Develop the graduate student retreat further	Better retreat	2021	Head of Department
2	Develop guidelines for allocating of part time teaching for MS students	Guidelines	2022	Graduate Committee of Faculty

2.5 LÍF561 Biology (PhD 180 ECTS)

Ch. 2.5.2	Teaching and Learning			

1	Integrate students at other institutions into the PhD community at the department	Better integration	Ongoing	Head of Department
2	Improve knowledge of midterms and graduation requirements for faculty and committee members at other institutions	Faculty handbook	2022	Head of Department and Graduate Committee of Faculty
3	Improve information of supervisors to students	Decreased time of completion of a graduation	Ongoing	Department Head
4	Review learning outcomes	Reviewed learning outcomes	2023	Department Head
5	Have orientation for new PhD students in programme, introduce them to building(s) and community	Orientation day	Ongoing	Department Head and Graduate Committee of Faculty
Ch. 2.5.3	Coordination between teaching and research			
1	Develop TA ships for PhD students, that would be completed within the first 3 years of study and not in year 4 or later	Encourage PhD students to apply for TA grants earlier in studies	2021	Head of Department
2	Improve research facilities for work of graduate students	Labs for marine and freshwater studies, growth chambers and greenhouse	2022-2024	Faculty Head

2.6 LUF441 Bioinformatics (MS 120 ECTS)

Ch. 2.6.1	Students			
1	Increase recruitment with advertisement campaign and items 2 and 3.	More students in programme	2021	Head of Department
2	Make 90 ECTS projects available	As stated	2021	Head of Department
3	Make potential research projects visible to prospective students	Online projects at luv.s.hi.is	2021	Head of Department
Ch. 2.6.2	Teaching and Learning			
1	Add specific bioinformatics courses e.g. small courses around specific methods or datasets	Three new small courses	2022	Head of Department

2	Reevaluate the programme	Better programme	2022	Heads of Department and Faculty
3	Merging the line with other focus areas in Biology if restructuring doesn't increase attendance	Programme changed to specialization in biology	2022	Head of Department
Ch. 2.6.3	Coordination between teaching and research			
1	Integrate with other faculties, computer science and MS in biostats/public health	More students from other programmes in courses	2022	Head of Department

Department of Geography and Tourism Studies

2.7 LAN267 Geography (BS 180 ECTS)

Ch. 2.7.1	Students			
1	Increase student recruitment	More students	2021	All Faculty
2	Gain information on employability of graduated students	Survey report	2021	Board of Faculty
3	Improve the dialogue between students and department on quality of teaching	Regular meetings of head of department with student representatives	2021	Head of Department/ All Department
4	Make a formal process around the follow up on the departmental responses to teaching surveys	Letter to students representatives	2021	Head of Department
Ch. 2.7.2	Teaching and Learning			
1	Strengthen the position of Head of department, allocating more time and resources for the job	Increase teaching discount for taking on the post	2021	Head of Department/Head of Faculty
2	Improve geography laboratory facilities	Better and more secure working conditions	2021	Head of Department/Head of Faculty
3	Improve GIS & remote sensing facilities	Up to date equipment and facilities for geospatial teaching	2021	Head of Department/Head of Faculty
4	Analyze courses on GIS, remote sensing and cartography in the School with the aim of avoiding repetition and developing more advanced courses	Combined courses and new more advanced courses	2021-2022	Academic employees/Head of Department/Head of Faculty
5	Increase the number of elective courses in geography	Courses	2022	Head of Department/Head of Faculty

6	Revise learning outcomes for programme and courses on a regular basis	Revised learning outcomes for programme and courses	Every 3d year	Head of Department
7	Further encourage formative assessments	More emphasis on formative assessment	Ongoing	All teachers
8	Survey methods of assessment in courses	An overview of assessment methods.	2021	Head of Department
9	Consider placement opportunities	Report on possibilities for more systematic approach to placement opportunities	2022	Head of Department / all teachers
10	Improve quality of teaching	Improve access to continuous education in university teaching (e.g. increase support to teachers who want to enrol for the graduate diploma in Teaching studies)	Ongoing	Head of Faculty/ Head of Department
Ch. 2.7.3	Coordination between teaching and research			
1	Cross-faculty coordinated reorganisation of geospatial teaching programme (GIS/RS)	More nuanced and advanced course selection in GIS/RS	Next 3 years	Coordinated via CRS Coordinating teacher / Head of Department
2	Increase student opportunity to actively experience ongoing research	Regular research seminars open for undergraduate and graduate-level students	Ongoing	All teachers
3	Improve coordination of BS projects with regard to fieldwork	Revised handbook of BS thesis	2021	Coordinating teacher / Head of Department
4	Create a pool of possible research topics for BS thesis	A list of research topics	2021	Coordinating teacher / Head of Department
5	Encourage teachers to make use of smaller research grants for creating research opportunities for students	More small research grants to the department	Ongoing	All teachers
6	Provide deskpace and relevant research facilities for research assistants	Secure deskpace and relevant research facilities for research assistants	Ongoing	Head of Faculty/ Research Unit head Institute Head
7	Explore possibilities of collaboration in course offering between geography and biology	Analyse the situation and report	2021	Head of Department/ Head of Faculty

2.8 LAN441 Geography (MS 120 ECTS)

Ch. 2.8.1	Students			
1	Increase selection of graduate student courses	More dedicated MS courses	2021	Head of Department/Head of Faculty
2	Gain information on employability of graduated students	Survey and report	2022	Head of Department/Head of Faculty
3	Improve orientation of MS students at the start of their studies	Plan	2021	Head of Department
4	Establish Graduate student retreat	Organised retreat for all MS and PhD students	2021	Head of Department
Ch. 2.8.2	Teaching and Learning			
1	Improve geography laboratory facilities	Better and more secure working conditions	2021	Head of Department/Head of Faculty
2	Improve GIS & remote sensing facilities	Up to date equipment and facilities for geospatial teaching	2021	Head of Department/Head of Faculty
3	Revise learning outcomes for programme and courses on a regular basis	Updated learning outcomes	Every 3d year	Head of Department
4	Further encourage formative assessments	More emphasis on formative assessment	Ongoing	Head of Department/all teachers
5	Consider placement opportunities	Report on possibilities for more systematic approach to placement opportunities	2022	Head of Department / all teachers
6	Improve dissemination of information about formal requirements and milestones of MS studies to teachers	Updated handbook of procedures and milestones	2021	Faculty Post Graduate Committee and Head of Department
Ch. 2.8.3	Coordination between teaching and research			
1	Cross-faculty coordinated reorganisation of geospatial teaching programme (GIS/RS)	More nuanced and advanced course selection in GIS/RS	Next 3 years	Coordinated via CRS
2	Establish more MS specialisations	Specialisation in specific core areas such as Geoinformation/Remote Sensing Master and Soil Science	Within next 5 years	Head of Department
3	Increase student opportunity to actively experience ongoing research	Regular research seminars open for undergraduate and graduate-level students	Ongoing	All teachers

4	Encourage teachers to make use of smaller research grants for creating research opportunities for students	More small research grants to the department	Ongoing	Head of Department
5	Secure deskpace or relevant research facilities for research assistants	Secure deskpace and relevant research facilities for research assistants	Ongoing	Head of Faculty / Head of Department
6	Explore possibilities of cross faculty collaboration for course offering in MS studies	Analyse possible synergies and report	2021	Head of Faculty/ Faculty Board
7	Increase the use of small MS research grants available	More systematic presentation of the grants to the faculty staff	2021	Faculty Board

2.9 FER265 Tourism Studies (BS 120 ECTS)

Ch. 2.9.1	Students			
1	Promotion of Tourism studies	Recruiting more students	2021	Head of Department / all teachers
2	Implementation of a Diploma in Hospitality and Tourism	60 ECTS Diploma programme	2021	Head of Department
Ch. 2.9.2	Teaching and Learning			
1	Encourage variety of teaching methods	A balanced variety of teaching methods	Ongoing	All teachers
2	Improve quality of teaching	Improve access to continuous education in university teaching (e.g. increase support to teachers who want to enrol for the graduate diploma in Teaching studies)	Ongoing	Head of Faculty/ Head of Department
Ch. 2.9.3	Coordination between teaching and research			
1	Increase student's opportunity to actively experience ongoing research	Regular research seminars open for undergraduate and graduate-level students	Ongoing	All teachers
2	Improve coordination of BS projects with regard to fieldwork	Revised handbook of BS thesis	2021	Coordinating teacher / Head of Department
3	Create a pool of possible research topics for BS thesis	A list of research topics	2021	Coordinating teacher / Head of Department
4	Encourage teachers to make use of smaller research grants for	More small research grants to the department	Ongoing	All teachers

	creating research opportunities for students			
5	Provide deskpace and relevant research facilities for research assistants	Secure deskpace and relevant research facilities for research assistants	Ongoing	Head of Faculty/ Research Unit Head / Institute Head
6	Explore possibilities of collaboration in course offering across faculties	Analyse the situation and report	2021	Head of Department / Head of Daculty

2.10 FER442 Tourism Studies (MS 120 ECTS)

Ch. 2.10.1	Students			
1	Increase the number of specialized MS courses	More dedicated MS courses	2021	Head of Department
2	Improve the provision of compulsory courses in Tourism offered in English	More compulsory MS courses in English	2021	Head of Department
3	Improve orientation of MS students at the start of their studies	Plan	2021	Head of Department
4	Establish a regular graduate student retreat	Organised retreat	2021	Head of Department
Ch. 2.10.2	Teaching and Learning			
1	Regular revision of learning objectives and curriculum mapping	Updated learning outcomes	Every 3d year	Head of Department
2	Develop more MS specialisations in Tourism	Implement more MS specialisations	2022	Head of Department
3	Improve dissemination of information about formal requirements and milestones of MS studies to teachers	Updated handbook of procedures and milestones	2021	Faculty Post Graduate committee and Head of Department
Ch. 2.10.3	Coordination between teaching and research			
1	Increase student opportunity to actively experience ongoing research	Regular research seminars open for undergraduate and graduate-level students	Ongoing	All teachers
2	Encourage teachers to make use of smaller research grants for creating research opportunities for students	More small research grants to the department	Ongoing	All teachers
3	Provide deskpace and relevant research facilities for research assistants	Secure deskpace and relevant research facilities for research assistants	Ongoing	Head of Faculty/ Research Unit Head / Institute Head

4	Explore possibilities of cross faculty collaboration for course offering in MS studies	Analyse the situation and report	2021	Head of Department/ Head of Faculty
5	Increase the use of small MS research grants available	More systematic presentation of the grants to the faculty staff	2021	Faculty Board

2.11 FER561 Tourism Studies (PhD 180 ECTS) and LAN561 Geography (PhD 180 ECTS)

Ch. 2.11.2	Teaching and Learning			
1	Regular revision of learning outcomes and curriculum mapping	Updated learning outcomes	Every 3d year	Head of Department and Graduate Committee of Faculty
2	Have orientation for new PhD students, programme, building and community	Organised event	2021	Head of Department and Graduate Committee of Faculty
3	Improve the access of PhD students to relevant courses via mobility grants.	Mobility grants made available	2021	Head of Faculty
4	Improve knowledge of faculty and committee members at other institutions about Midterms and requirements for graduation	Handbook of procedures and milestones	2021	Head of Faculty and and Graduate Committee of Faculty
5	Reduce time to graduation	Decreased average time of completion	Ongoing	Department Head
Ch. 2.11.3	Coordination between teaching and research			
1	Secure housing of PhD candidates in the same building as supervisors		Ongoing	Head of Faculty

3. Management of Research

Ch. 3.3				
1	Create more research groups within the various Departments and cross Departments	More and stronger research activities	2021	Head of ILES
2	More high-quality applications in research funds both international and national	More research grants	Ongoing	All faculty members
3	Improved facilities and equipment for research	See under each department.	Ongoing	Miscellaneous