Report from the MN committee for increased student mobility to UNIS

07.09.2016

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Executive summary:

The University of Oslo (UiO) is one of the four largest Norwegian contributors when it comes to polar research. Therefore, further developing the collaboration with UNIS is given high priority in the University of Oslo's high north strategy. UiO wants to increase the proportion of UNIS students from UiO to 25% (increase from today 15 to 55 student years (60 ECTS)). Up to half of these may be exchange students from UiO's partner institutions.

Actions to be taken to achieve this "25%" goal:

i) UiO will develop an Arctic profile on selected BSc and MSc study programs, where students are to spend at least one full semester at UNIS. UiO should contribute to a CSE component in the semester packages at UNIS.

ii) Mutual exchange of adjunct professors in 3-5 prioritized areas to increase the research collaborations with UNIS.

iii) In the case that UNIS is going to expand, develop new semester packages (30 ECTS) in close collaboration with UNIS and other partner universities.

iv) Announce 2 x 4PhD clusters to develop new research projects with UNIS. Interdisciplinary thematic research with large recruitment potential should be prioritized.

1. Introduction:

The MN Faculty Management has ambitions to enhance cooperation with the University Centre in Svalbard (UNIS). Due to the severely reduced workforce in the coal mines on Svalbard and the wish for continued Norwegian settlement in the archipelago, there is political interest to increase educational and research activities at Svalbard. UNIS is expected to take a stronger social responsibility to ensure stability in the population and resilience in the community in Longyearbyen. This rise in political interest in Svalbard coincides with the strategic goals of the faculty program revision "InterAct". InterAct strives to increase student mobility and internationalization, development of general skills and greater proximity to research starting at bachelor level. The Dean of Study initiated a committee to explore how UiO can significantly increase student mobility to UNIS. The committee was given the following mandate:

1.1. Mandate:

• The committee will submit concrete proposals for educational cooperation between relevant departments / study programs at MN and UNIS, preferably at bachelor and master levels.

• It is particularly relevant to evaluate education spanning over at least one semester for a group of students in a study program. For bachelor programs the education offered must be conducted in the program's development semester (utviklingssemester) (variably positioned in the 5th or 6th semester).

• Proposals should be based on existing disciplines at UNIS (Arctic biology, Arctic geology, Arctic Geophysics and Arctic technology), but the committee can also suggest startups.

• The committee should consider the need and possibilities of teaching methodology at UNIS - which in this case would violate the current principle which states that UNIS should only supplement the teaching provided by mainland universities.

• The committee is requested to map existing research and educational collaboration between MN and UNIS, and suggest increased formal cooperation in selected areas (preferably adjunct positions) to strengthen cooperation.

• The committee was requested to assess UNIS cooperation in all new bachelor and master programs offered at the MN faculty, but with a special focus on geosciences, life sciences and physics.

• The committee should discuss the work with relevant professionals at UNIS so that the academic cooperation foundation between the two institutions is anchored.

1.2. Committee members:

Jøran Moen, Department of Physics (leader)

Alvar Braathen, Department of Geosciences

Jørn Hurum, Natural History Museum

Katrine Borgå/Håvard Kauserud, Department of Biosciences (alternates)

Jaan Erik Roots, Department of Chemistry

Arne Bernhard Sletsjøe, Department of Mathematics

Yvonne Halle, Faculty Student Administration (secretary)

1.3. How the committee has organized the work:

The committee has met four times during the winter (January to April) in addition to a short start-up meeting in December. After an initial discussion on how MN can increase the number of student exchanges with UNIS, the meetings in January and February focused on how the different academic environments can make UNIS more attractive. Another focus area was to map Arctic research, participation and involvement in the most actual departments at the faculty; the Departments of Physics, Geosciences, Biosciences, Mathematics and Chemistry and the Natural History Museum. The meetings in March and April focused on the ambition of the committee, both short term and long term, and how to open the bottlenecks of today's student exchange to UNIS and the further process to ensure that UNIS is central in the work with the planned development semester (5th or 6th semester) in the newly revised study programs offered from autumn 2017.

2. Background:

2.1. Ongoing research collaboration with UNIS:

MN is well represented when it comes to research infrastructure, co-publications and on-going projects. According to the NIFU Report 34/2013, UiO has co-authorship of approximately 25% of UNIS' publications. See appendix 1.

2.2. Contributions to educational activities with UNIS:

Adjunct professors per 15.04.16:

DEPARTMENT OF ARCTIC GEOLOGY				
Braathen, Alvar	Adjunct Professor	Structure geology	Fixed term 1 per – the Norwegian Ministry of Education and	01.06.14 – 31.05.17

			Research (KD)	
Hellevang, Helge	Adjunct Associate professor	Geochemistry	Fixed term 1 per – NFR/SUCCESS	01.02.15 – 31.01.18
Humlum, Ole	Adjunct Professor	Physical geography	Fixed term 5 per – KD	01.10.03 – 30.09.16
Hurum, Jørn	Adjunct Professor	Paleontology	Fixed term 3 per – KD	01.07.09 – 30.06.17
DEPARTMENT OF ARCTIC GEOPHYSIC				
Hagen, Jon Ove	Adjunct Professor	Snow and ice physics	Fixed term 2 per – KD	01.11.10 – 31.10.16
Moen, Jøran	Adjunct Professor	Upper polar atmosphere	Fixed term 4 per – ARS/NAROM	01.01.01 – 31.12.17
DEPARTMENT OF ARCTIC TECHNOLOGY				
Sælthun, Nils Roar	Adjunct Professor	Hydrology	Fixed term 1 per – KD	01.08.13 – 31.12.17

Table 1. Adjunct professors per 15.04.2016

Statistics in student mobility from UiO to UNIS:

Over the past six years, from spring 2010 until autumn 2015, 21 students have taken courses at UNIS per semester on average. The master's programs in biology and geology recruit most students to UNIS, on average, respectively 4 and 5 students per semester. The bachelor programs in biology (BIO), geosciences (GEO) and physics, astronomy and meteorology (FAM) also recruit some students each semester. In addition, both exchange students and PhD candidates take courses at UNIS. Students from other programs have also sporadically taken UNIS courses. The distribution of students from UiO with examination results from UNIS courses per semester, from spring 2010 until autumn 2015, are shown in table 2. The majority of bachelor students complete 30 ECTS during their stay at UNIS, while the master's students and PhD candidates often stay for a shorter period and only take 10 ECTS during their stay. From this, if we exclude the international exchange students, Table 2 shows that UiO produces about 10-15 student years at UNIS.

	H15	V15	H14	V14	H13	V13	H12	V12	H11	V11	H10	V10	Average
Annet	0	1	1	0	0	0	0	0	0	1	0	0	0
Bsc. BIO	0	3	1	2	2	5	8	5	3	2	0	1	3
Bsc. exchange student	1	0	1	3	0	5	0	0	0	0	0	1	1
Bsc. FAM	0	3	4	0	0	1	3	4	4	2	1	0	2
Bsc. GEO	2	1	0	1	0	1	2	3	0	2	4	6	2
Msc. BIO	0	1	4	9	8	3	4	2	4	7	0	0	4
Msc. exchange student	1	4	2	2	0	0	0	0	3	5	0	3	2
Msc. GEO	7	4	6	6	3	5	6	3	6	0	4	5	5
Msc. Lap	0	0	0	0	0	0	0	0	0	1	0	1	0
Msc. PGP	0	0	0	0	0	0	0	0	1	0	0	0	0
Msc. PHYS	0	0	1	0	0	0	0	0	0	0	1	0	0
Ph.d.	2	3	2	6	2	3	2	2	5	3	5	3	3
Ph.d. guest student	0	0	0	0	0	0	0	0	0	2	0	0	0
Sum	13	20	22	29	15	23	25	19	26	25	15	20	21

Table 2. The distribution of students from UiO with examination results from UNIS courses per semester, from spring 2010 until autumn 2015.

The bachelor students and most of the exchange students stay in Longyearbyen for a complete semester and take several courses in parallel totaling 30 ECTS credits. The master students and PhD candidates usually takes one or maybe two courses comprised in time. Each master or PhD UNIS course typically lasts for three to five weeks, taught as a full-time study during that period.

The students from UiO take many different courses at UNIS. During the past six years, UiO students have taken exams in 68 different courses from all the four branches of study; Arctic Biology (AB), Arctic Geology (AG), Arctic Geophysics (AGF) and Arctic Technology (AT). Table 3 shows how the UiO candidates with completed exams are spread across the various courses versus time from spring 2010 until autumn 2015.

The UNIS annual report from 2014 states that the Norwegian degree students account for about 45% of the student mass. The students were divided between the Norwegian universities as follows:

88 students from the Norwegian University of Science and Technology - NTNU (32.6%)

58 students from the Arctic University of Norway - UiT (21.5%)

56 students from the University of Bergen - UiB (20.7%)

34 students from the University of Oslo - UiO (12.6%)

18 students from the University of Stavanger - UiS (6.7%)

10 students from the Norwegian University of Life Sciences - NMBU (3.7%), 4 from the Nord University (1.5%) and 2 from the University of Agder - UiA (0.7%).

In addition to the Norwegian degree students listed above, the majority of the institutions also have UNIS students via exchange agreements. As has always been the case, all international students who do not have an exchange agreement with a university on the Norwegian mainland are registered at UiT.

	H15	V15	H14	V14	H13	V13	H12	V12	H11	V11	H10	V10	
AB-201	1		1		2		8		1				
AB-202		3	1		2		8		1				
AB-203		3		3		6		7		4		2	
AB-204	1			2		6		6		4		2	
AB-205							2	1					terminert
AB-206	1		1		3		3						
AB-320/820			1/0				3/0				2/0		
AB-321/821					1/0				2/0				
AB-322			3				1						
AB-323/823				1/0				1/0				1/0	
AB-325/825		1/1								1/0			
AB-326/826					3/0				2/0				
AB-327/827							1/0						terminert
AB-329/829						1/0				5/0			
AB-330/830				1/0				1/0		1/0			
AB-332/832			1/0		1/0								
AB-333/833				1/0									
AB-335					1								
AB-336/836			1/0										
AB-337/837				2/1									
AFS-201							2		3		4		terminert
AG-204		1		2		1		3		2		7	
AG-209		1		1		1		3		2		7	
AG-212											1		terminert
AG-218/219	2/0		1/0										
AG-322/822		1/0		0/1								1/0	
AG-323/823	1/2								1/0		4/0		
AG-325/825		1/2		2/3		2/1		1/0		2/0		5/0	
AG-326/826			1/0				1/0		1/0				
AG-330/830		3/0		5/0		4/0		3/0		5/0		4/0	
AG-332/832	2/0		1/0		1/0		2/0		1/0				terminert 2016
AG-334/834			0/1				1/0				1/0		
AG-335/835		1/0				1/1				3/0			
AG-336/836					0/1				4/0				
AG-338/838	2/0								5/0				
AG-339/839											2/0		terminert 2016
AG-340	4		4				1		1				
AG-341					1								terminert 2016
AG-346		3											
AG-833				2									
AG-844							1						terminert 2015
AGF-211		2				1		3		2			
AGF-212		1				1		4		2			
AGF-213		1	3				3		3		1		
AGF-214			4				3		3		1		
AGF-216		1		1		5		6					
AGF-301/801						0/2							
AGF-304/804						0/2							
AGF-311/811			3/0										
AGF-312		3		1									
AGF-340									4				terminert
AGF-345/845					1/0						3/0		
AGF-350/850				1/0									
AGF-351									1				terminert
AS-101		7		5		11		14		7		10	
AT-207									1				terminert
AT-209									1				
AT-301/801					1/1		2/0						
AT-329				1				2					
AT-330/830		1/1		4/0		1/0							

Table 3: The distribution of UiO exams at UNIS courses per semester, from spring 2010 until autumn 2015.

3. Strategies for increased recruitment to UNIS:

MN at UiO is a large institution with about 2200 students, 700 PhD candidates and an academic staff counting 1300. The faculty is also amongst the largest when it comes to polar research. The committee proposes that UiO aims to always fill 25% of student FTEs at UNIS. To reach such an ambitious goal requires a successful development of Arctic profile BSc and MSc study programs at UiO. Today UiO has only 10-15 equivalent student years at UNIS. It is realistic to reach 55 student year equivalents within the next decade, of their total of 220 students. Even in the case of a doubling of the student numbers at UNIS, it is still realistic that UiO may contribute as much as 25%, i.e. 100 students. 50% of the UiO students may be recruited via our UiO international student exchange agreements.

For both scenarios, zero growth and UNIS doubling its size, we will deliberately collaborate with UNIS to develop an educational and scientific strategy with the potential for significantly increased recruitment.

In the case of a doubling there is not enough courses at UNIS today, so we have to think in terms of developing new semester packages (30 ECTS), first at BSc level and then at MSc level.

3.1. Progress plan:

0-5 years (zero growth scenario):

i) UiO has quoted 25 student years at UNIS. Immediate action is to be taken to ensure that we manage a doubling from today's 10-15 student years to fill the quote.

ii) Enhanced promotion of the existing opportunities in the existing/InterAct MN-study programs and the courses offered at UNIS. Develop and marketing "Arctic profile" for selected study programs.

iii) Define an Arctic profile on all relevant BSc and MSc study programs at MN. Revise content of some existing courses at UNIS and/or develop some new courses at UNIS to serve the need for research based education for UiO students. This will be important to reach our 20% goal.

5-10 years (in case UNIS starts to grow towards an envisioned doubling in size):

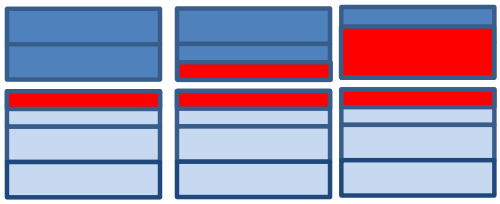
iv) Develop new 30 ECTS BSc and MSc semester units in collaboration with UNIS. This should be research motivated and strengthen the potential for research grants.

v) The new semester modules should preferentially contain inter-disciplinarity, professional skills, field work, and the CSE component, on topics that has great appeal in order to attract dozens of applicants.

3.2 Example : Safety in the Arctic: may contribute 30 student years:

UiO plans to maintain the 25% goal even if UNIS doubles its size. However, for UiO to recruit 100 students it will be necessary to develop interdisciplinary semester units that can recruit students from several Bachelor programs. "Safety in the Arctic" is one such topic that may potentially recruit BSc and MSc students from three MN departments.

As illustrated in the Figure below, by developing one new semester course module in BSc, and one new semester module in MSc, plus Master projects, we can recruit 30 student years in total, produced by students staying at UNIS for one, two or four semesters:



BSc : 5th or 6th semester : 20 students x 30 ECTS = 10 student years

Develop a new 30 ECTS program module (5th or 6th) semester that covers geophysical risk factors incl. space weather, risk monitoring and risk management.

Content:

- Geophysical processes/technology
- Multi-instrument observations remote and in-situ
- Modelling
- Risk Management

MSc: One, two or three semesters:

One semester course students: 20 students x 30 ECTS: 10 student years
Master projects: 10 x 60 ECTS Master projects: 10 student years

Arctic profile MSc on research subjects/collaboration with UNIS on Safety in the Arctic. The most relevant example from Space physics is Space weather hazards for GPS satellite and communication systems. Mathematics and geophysics, can probably provide topics under the Arctic Safety umbrella, f.ex. ice drift, oil spill, and polar meteorology.

Content:
Research project based on observations and modelling.

In order for UiO to reach the 100 student year goal we will need at least one additional interdisciplinary topic.

4. Existing opportunities for UiO students at UNIS:

The faculty considers study period at UNIS as very valuable for its students. They'll get both field experience and proximity to research, as well as international experience and other general skills due to being taught in small classes. The most relevant study programs at MN are the bachelor programs in biology, geosciences: geology, geophysics and geography and physics, astronomy and meteorology as well as the master programs in biology, geosciences and physics. There has also been some interest in student exchange to UNIS in the academic environment in mechanics at the Department of Mathematics, but with no result in student mobility so far. The reasons for the relatively low proportion of UiO students at UNIS are presumably complex. Some known bottle necks and challenges are inflexible courses of study in the MN study programs, high competition for relatively few places on each course at UNIS and high admission requirements. In addition the opportunity for an exchange to UNIS is not well enough known in the faculty disciplines and the advertising from faculty academic staff is variable.

The UNIS courses are supposed to be complementary to mainland courses, and not substitutes. Today some of the relevant study programs have too much mandatory activity and too little flexibility for students to choose other courses. For some study programs this, in addition to high competition for places on the master's program, can cause the students to not choose courses elsewhere. Many of the courses at UNIS are very popular to applicants from other institutions which results in high competition for admission. Other reasons often mentioned are late application deadlines and lack of time to arrange with all necessary practical things before departure and start of the course in Longyearbyen. In collaboration with the mainland universities in Norway, UNIS has developed its own admission rules, with application deadlines three times per year (15. February for summer courses, 15. April for autumn courses and 15. October for spring courses). For admission requirements and ranking criteria, see http://www.unis.no/studies/regulations-and-routines/admission-regulations/.

In 2014 a quota system was established for the eight Norwegian universities in the collaboration agreement with UNIS, and implemented autumn 2015. The reason for the introduction of quotas is the objective given by the Norwegian Ministry of Education and Research (KD) to ensure a balanced proportion of international and Norwegian students. Because the courses offered by UNIS always contain a field component, they can normally only take on about 16 to 20 students in each course. It is often high competition for these few places. A quota system for the collaboration universities will ensure a number of reserved places to the universities on current topics. To increase predictability for the students, the universities may nominates their own students in advance of UNIS' deadlines.

One challenge in getting the quota scheme to work is that the partners manage to see their needs and ask for the correct number of quotas in the right topics. It might be tempting to be more ambitious than what is probably possible to achieve, but there must be a mutual commitment, so if an institution ask for quotas it must also work actively to fill those quotas. The experience with the quota system after it has been used for admissions in 2015 and 2016, is that more Norwegian degree students are admitted early in the admission process, but only 50% of the reserved places in the quota program are used. This seems to be due to the universities don't have, or don't have enough reserved places, in the right courses. To optimize the quota program it is decided that it should be revised at least every three years. The universities announced in spring 2016 their requests for new quotas for the second period, which includes the admissions from spring 2017 to autumn 2019. See the MN Faculty's statement - in the hearing process document (attachment 1).

	Emner tilknyttet avdeling for arktisk biologi	KVOTEØNSKER UNIVERSITETENE 2017-2019				
Emnekode	**Emnetittel**	**ECTS**	**Next time**	**How often**	**Seats**	**Quotas**
AB-201	Terrestrial Arctic Biology	15	Autumn 17	Yearly	**18**	5
AB-202	Marine Arctic Biology	15	Spring 17	Yearly	**18**	3
AB-203	Arctic Environmental Management	15	Spring 17	Yearly	**18**	6 (3+3)
AB-204	Arctic Ecology and Population Biology	15	Autumn 17	Yearly	**18**	5
AB-206	Introduction to Svalbard's Terrestrial Flora and Fauna	5	Autumn 17	Yearly	**18**	3
AB-325	Biotelemetric Methods	10	Spring 17	Every second year	**20**	2
AB-330	Ecosystems in Ice Covered Waters	10	Spring 18	Every second year	**18**	1
AB-333	Arctic Limnology	10	Spring 17	Yearly	**18**	1
AB-336	Arctic Mycology	10	Autumn 17	Yearly	**18**	1
	Emner tilknyttet avdeling for arktisk geologi	**KVOTER UNIVERSITETENE 2017-2019**				
AG-204	The Physical Geography of Svalbard	15	Spring 2017	Yearly	**20**	2
AG-209	The Tectonic and Sedimentary History of Svalbard	15	Spring 2017	Yearly	**20**	2
AG-218	International Bachelor Permafrost Summer Field School	10	Autumn 2017	Yearly	**20**	2
AG-220	Environmental Change in the High Arctic Landscape of Svalbard	10	Autumn 2017	Yearly	**20**	3
AG-322/822	Fold and Thrust Belts and Foreland	10	Spring 2017	Yearly	**20**	3
AG-323/823	Sequence Stratigraphy; a Tool for Basin Analysis	10	Autumn 2017	Yearly	**20**	3
AG-325/825	Glaciology	10	Spring 2017	Yearly	**20**	3
AG-330/830	Permafrost and Periglacial Environments	10	Spring 2017	Yearly	**20**	3
AG-334/834	Arctic Basins and Petroleum Provinces	10	Autumn 2018	Every second year	**25**	1
AG-335/835	Arctic Seismic Exploration	10	Spring 2017	Every second year	**20**	1
AG-336/836	Rift basin reservoirs: From outcrop to model	10	Autumn 2017	Yearly	**20**	2
AG-338/838	Sedimentology Field course – from Depositional Systems to Sedimentary Architecture	10	Autumn 2017	Yearly	**20**	2
AG-340	Arctic Glaciers and Landscapes	10	Autumn 2017	Yearly	**20**	2
AG-346	Snow and Avalanche Dynamics	10	Spring 2017	Yearly	**20**	3
AG-347/847	Glaciers and Glaciation	10	Autumn 2017	Yearly	**20**	1
AG-348/848	Arctic Late Quaternary Glacial and Marine Environmental History	10	Autumn 2017	Yearly	**25**	1
AG-349/849	Geological Constraints on CO2 Storage	5	Autumn 2017	Yearly	**20**	20
	Emner tilknyttet avdeling for arktisk geofysi	**KVOTER UNIVERSITETENE 2017-2019**				
AGF-210	The Middle Polar Atmosphere	15	Autumn 2017	Yearly	**20**	2
AGF-211	Air-Ice-Sea Interaction I	15	Spring 2017	Yearly	**20**	5
AGF-212	Snow and Ice Processes	15	Spring 2017	Yearly	**20**	5
AGF-213	Polar Meteorology and Climate	15	Autumn 2017	Yearly	**16**	5 (2+3)
AGF-214	Polar Ocean Climate	15	Autumn 2017	Yearly	**16**	5 (2+3)
AGF-301/801	The Upper Polar Atmosphere	15	Spring 2017	Yearly	**20**	5
AGF-304/804	Radar Diagnostics of Space Plasma	15	Spring 2017	Yearly	**20**	5
AGF-311/811	Air-Ice-Sea Interaction II	10	Autumn 2018	Every second year	**20**	1
AGF-312	Remote sensing of the cryosphere	10	Spring 2017	Yearly	**20**	1
AGF-345/845	Polar Magnetospheric Substorms	10	Autumn 2017	Yearly	**16**	5
AGF-350/850	The Arctic Atmospheric Boundary Layer and Local Climate Processes	10	Spring 2018	Every second year	**16**	1
	Emner tilknyttet avdeling for arktisk teknolo	**KVOTER UNIVERSITETENE 2017-2019**				
AT-209*	Arctic Hydrology and Climate Change	15	Autumn 2017	Yearly	**20**	1
AT-330	Arctic Environmental Toxicology	10	Spring 2017	Yearly	**20**	2
* interdisiplinære emner						

Table 4. List of UiO's requested quotas from spring 2017 to autumn 2019.

5. InterAct BSc and MSc opportunities at UNIS:

UNIS is by MN Faculty's management considered a good alternative to study abroad.

5.1. Which study programs are the most relevant for an "Arctic Profile" specialization?

The BSc program Physic, Astronomy and Meteorology (FAM) has a recommended study alternative in the subject area "Meteorology and oceanography" with a stay at UNIS in the last semester. This actual subject area will, with InterAct from autumn 2017, be a part of the new BSc program Geophysics and Climate, but the student exchange opportunities with UNIS will be maintained. As described in the example " Safety in the Arctic" from section 3.1, the development of an interdisciplinary module that covers geophysical risk processes are proposed, in a collaboration between the departments of Physics, Mathematics and Geosciences. Space physics at UiO has close research collaboration with UNIS, and MSc and PhD students benefit from taking courses and supervision at UNIS.

Both the BSc and the MSc program in geosciences currently have many compulsory courses and little opportunity for student exchanges with UNIS. In the new BSc program Geology and Geography, starting autumn 2017, most of these barriers will be removed. Also in the new MSc program in geosciences, there will be few compulsory courses, and increased flexibility for students to choose courses from other educational institutions.

Today the Department of Biosciences (IBV) has preapproved courses at UNIS, which makes it possible for the students to take UNIS courses without being delayed in their studies at the University of Oslo. The challenge for IBV students is the need to choose a different curriculum at the university before they travel to Svalbard. The BSc program at IBV will work for an easier exchange with UNIS with a free 6th semester proposed in the InterAct process.

At the Department of Mathematics, there are several of the academic staff who are active on Svalbard, but student mobility between the department and UNIS has not been formalized. Both the mechanics or fluid mechanics and the stochastic group are interested in increased student exchange with UNIS. Another interesting area in mathematics is risk factors and risk analysis. This is particularly an interesting perspective to connect researchers from the Departments of Physics, Mathematics and Geosciences together with «Safety in the Arctic».

Today, there are no relevant courses at UNIS for the BSc program in chemistry and there is no formal study option at UNIS for the MSc program in chemistry neither. The Department of Chemistry can still see opportunities for closer cooperation with UNIS in areas like chemistry in the atmosphere, environmental sciences and the link between chemistry and geology. Also the SMN environment in terms of materials may be appropriate for increased cooperation with UNIS and the Department of Chemistry.

5.2. Which BSc study program contains the freedom to shop courses without taking any precautions of the content?

Geo and Bio definitely have the largest potential to recruit more students to UNIS. Today there are obstacles for both geology and biology students going to UNIS, due to compulsory courses and course overlap and credit reduction.

This will be removed during the Interact process.

Department of geosciences will develop Arctic profile bachelor with the 5th and the 6th semester at UNIS, which qualifies for the Master program at UiO.

Department of biosciences has 12-14 scientists with research interests in Svalbard. In order to develop an Arctic profile on the BSc program, it will be important to ensure there are suitable courses in the 6th semester spring term in Oslo. There is no adjunct professors in biology recruited from UiO, which of course means that UiO biologists are not involved in any strategic process or development of the study program in biology at UNIS.

Apendix 2 is a clip from the committee meeting where the representatives from the different departments/units shared their local discussions around the theme.

6. Long-term strategic collaboration with UNIS on education and research:

This must be related to development of long term research collaboration with UNIS staff, motivated by research excellence and the strive to developing focused research platforms, like for example SFF, SFI, Nordic Centre of Excellence, and EU research programs.

Such strategies are currently lacking.

7. How the report content has been discussed/integrated with UNIS staff:

Jøran Moen and Alvar Braathen in the position as Adjunct professors, have discussed our approach with UNIS staff in the branches of the Arctic geophysics and Arctic geophysics, respectively. Moen has also presented the idea of Arctic profile study programs with the Director Ole Arve Misund and the interim Director Frank Nilsen, and other UNIS staff, and the ambitious plans are well received. UNIS wish a meeting with MN-UiO once we have finished the report.

8. Recommendation for further work:

i) We recommend that MN set up strategy teams with UNIS to explore possible BSc semester course packages (30 ECTS), to obtain a competitive Arctic profile study programs at UiO, that contains field work branded with the CSE component for modelling and/or data analysis. It is recommended that strategies are developed for thematic/ interdisciplinary research with UNIS.

ii) In order to stimulate a bottom-up research driven strategic approach to strengthen the collaboration with UNIS, we propose that UiO within the scope of the High North Strategy, announces 2 x 4 PhD clusters, where UNIS is invited to take a share. The teaching duty for the PhD scholarships should be dedicated to course development at UNIS.

iii) We should prioritize research fields that have a realistic ambition to obtain a SFF/SFI/ERC/Horizon 2020 research funding. I.e. strengthen our research basis with UNIS.

iv) It is highly recommended to stimulate mutual adjunct professor ties with UNIS, in particular in Biology where today there is no such connection. We recommend that measures are taken as quickly as possible on how to tie IBV closer to UNIS.

APENDIX 1:

Ongoing research collaboration with UNIS:

Sitat fra MN polar dokumentet 25 Nov 2013:

Felles forskningsproduksjon:

UiO har medforfatterskap på ca 25% av UNIS' publikasjoner (Kilde NIFU Rapport 34/2013). Av norske institusjoner med >10 felles forskningsartikler med UNIS for perioden 1994-2012 er fordelingen: UiO 189 artikler, UiT 190 artikler, UiB 120 artikler, Norsk Polarinstitutt 82 artikler og NTNU 53 artikler.

Nedenfor er en tabell som viser samarbeid med UNIS gjennom gjesteforelesninger, studentveiledning (MSc/PhD) i 2012-2013:

Navn	Institutt	Forskning	Veiledning	Gjesteforeleser
Kjetil Hylland	IBV			AT330
Katrine Borgå	IBV			
Stein Fredriksen	IBV	X	X	
Wenche Eikrem	IBV	X	X	
Anne K. Brysting	IBV/CEES	X	X	
Thomas V. Schuler	IG	X		X
Dag Karlsen	IG	X		
Trond Eiken	IG	X		X
John Burkhart	IG			X
Bernd Etzelmüller	IG	X		
Jon Ove Hagen	IG	X		
Andreas Kääb	IG	X		

- Institutt for geofag er forskningspartner i UNIS CO_2 – lab., og er sammen med UNIS partner i Research Centre for ARCtic Petroleum Exploration (ARCEx). Samarbeidet fortsetter med CCS senteret NCCS.
- MN-fakultetet har flere pågående prosjekter med UNIS, med masterstudenter, ph.d. og postdoc samarbeider med UNIS om forskning og feltarbeid.

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APENDIX 2:

Which study programs are the most relevant for an "Arctic Profile" specialization?

Klippet inn fra referat fra møtet i arbeidsgruppen 04.02.2016

NHM – Jørn Hurum:

Museene har lite av undervisningen på bachelor og master og det er ikke helt opplagt hvordan de kan involveres. Blir ingen tung prosess på museet, kun enkeltpersoner, må eventuelt kobles med geologer fra Institutt for geofag. Alle de tre paleontologene driver på Svalbard, men ingen av geologene på museet driver på Svalbard. Jørn tar kontakt med Alvar om geologene på Blindern.

Jørn og Alvar kartlegger personer og kommer tilbake i løpet av neste uke. Arrangerer et møte. Prøve å komme opp med et semesteropplegg.

Matematisk institutt – Arne B Sletsjøe:

Har diskutert UNIS på undervisningsseminar på MI, mekanikerne/ fluidmekanikerne driver en del på Svalbard, er positive. Stokastikk-gruppen interessert i Svalbard (Giulia Di Nunno).

Har ikke fått diskutert med de som jobber med risikofaktorer/ risikoanalyse. Aktuelt i forhold til polarmeteorologi, isfjell og kalving samt transport og oljesøl, og romværets negative påvirkning på radiosignaler. Et bachelorkurs i risikoanalyse kan være bra for realfag generelt, med «safety in the Arctic» kan være et interessant perspektiv for å koble forskningsmiljø fra Institutt for geofag (IG), Fysisk institutt (FI) og Matematisk institutt (MI). Hva er risikofaktorene og hva er risikoanalyse? Matematikk er allerede essensielt inne i arktisk teknologi, men kan også bli det innenfor geofagene.

Møte, eventuelt dobbeltmøte med mekanikerne og risikoanalyse-gruppe, kanskje med Arne Huseby. Er det mulig å koble inn flere fra IG?

Kjemisk institutt – Jaan Roots:

Det finnes i dag aktuelle emner på UNIS for masterstudenter på kjemi, men ikke noe (semester) tilbud som passer for bachelorstudentene. Det er ikke aktuelt med mer enn en kvoteplass til kjemi på UNIS. Kan diskutere med UNIS hvordan de kan bruke vårt miljøkjemiemne for «sine» studenters arbeid.

Årsak til at det kan være vanskelig å rekruttere kjemistudenter til Svalbard er at instituttet har få studenter, ca 25 masterstudenter i året og 35 ansatte. Halvparten av masterstudentene kommer i tillegg utenfra og vet hva de vil på instituttet. De fleste studentene som kommer går mot materialer. Det er også ressurskrevende å ha utstyr på Svalbard (kostbart).

Interessant kobling mellom kjemi og geologi, geo-kjemi, ikke bare geologi som sådan, men også hvilken kjemi som ligger i geologien på Svalbard. Geologene kan kanskje mer geokjemi enn kjemikerne, Jaan tar det videre.

Annen aktuell kjemi på Svalbard:

- Atmosfærekjemi, analyse av atmosfæren og stoffer i luft. Armin Wisthaler, atmosfærekjemi – må også se hvilken retning miljøkjemiavdelingen går på sikt.
- Miljøvitenskap, ny avdeling med seks ansatte, går mot et generasjonsskifte der halvparten slutter de nærmeste 3 årene, et par ansatte mest aktuelle, interessert i atmosfærekjemi. Arrangere nytt raskt møte med disse personene. Ikke den store interessen for Svalbard i resten av gruppen på grunn av fokus på Kina.
- Bioanalyse har annet fokus enn på Svalbard.
- SMN-menneskene kan være aktuelle med tanke på materialer, Jaan har ikke fått snakket med dem enda.

Er man interessert i strategisk tenking rundt kvoteplasser, bør man gå aktivt inn som et studie med tilbud på Svalbard, bredt annonsert på instituttet, men med spesielt fokus på en studieretning.

Er det ikke forskningsinteresser på Svalbard, så blir det vanskelig, men har vi folk kan vi også ha lærerkrefter som kan undervise på Svalbard. Globale problemstillinger rundt klima og miljø konvergerer på Svalbard, og kan være interessant i forhold til instituttets engasjement i Kina. F.eks. sporing av miljøutslipp fra Kina mot Arktis; bidrag til oppvarming i Arktis fra sotutslipp i Asia – isotoper som sporer hvor forurensingen kommer fra – Geopolitisk klima.

Kjemisk institutt etterspør strategisk møte med UNIS. Hvilke interesser har IG og IBV i det? På sporbarhet av kjemikalier osv. Aktuelle for et møte Armin Wisthaler og Rolf Vogt. Kan gjerne ta med Armin til UNIS for å snakke med Mark Hermanson. UNIS er veldig interessert i kjemi. Hva er det vi egentlig kan få til. Lage en enkel aksjon for å se hvordan vi kan få kontakt. Ha et diskusjonsmøte om hva den gruppen kan være. Vurdere en studietur til Svalbard.

Institutt for biovitenskap – Håvard Kauserud:

Har hatt møte på IBV med (12-14) personer med generell interesse for Svalbard, som alle gjør noe i felt på Svalbard nå og da. En oppfatning at det er litt bakvendt at det er så få II'er stillinger fra IBV på UNIS, der er det store muligheter/potensiale, man kan også se for seg at det går andre veien.

I forbindelse med bachelorrevisjonen, InterAct er det relevant med en bacheloroppgave. Muligheter for å ta et bachelorprosjektemne ved UiO med felt på Svalbard?

I større grad samkjøre fagene ved IBV og UNIS for utviklingssemesteret i 6. semester. Viktig å samarbeide med UNIS. Må sørge for at de har et fullt semestertilbud på Svalbard.

Møtet foreslår å profilere mere løp rettet mot Arktis tidlig i bachelorgraden.

UNIS kan også profilere seg enda bedre mot IBV.

Foreslår at en Exphil-versjon rettet mot naturvitenskap legges på UNIS, i interaksjon med naturen. Hvem eier Exphil? HF, Institutt for filosofi, ide- og kunsthistorie og klassiske språk.

De filosofiske problemstillingene i Exphil er allmenne, men et kurs på Svalbard vil kunne integrere utvikling av tankesett rundt de enorme globale sammensatte utfordringene i Arktis: Politikk, ansvar, forvaltning, ressurser, næringsutvikling, forurensning, sårbarhet, urbefolkningens rettigheter osv……

Dag Hessen, Geir Hestmark kan være ressurspersoner her.

Et Arktis-tilpasset Exphil kunne kanskje også vært et aktuelt emne for lokalbefolkningen i Longyearbyen?

institutt for geofag – Alvar Bråthen:

NOTAT: Koordinering av program og kurs, UiO Geofag og UNIS Arktisk Geologi

Notatet er basert i et møte den 11.04.2016 ved Institutt for geofag, UiO. På møtet deltok de fleste av Institutt for Geofag sine vitenskapelige ansatte som er ansatt ved (som Prof. II) - eller har tette bånd til UNIS.

Til stede i møtet: Bernd Etzelmuller, Jørn Hurum, Karianne S. Lilleøren, Jon Ove Hagen og Alvar Braathen.
Fraværende: Annik Myre og Yvonne Halle.

Tema for møtet:

1) Hva er blokkene for UiO Geofag studenter til UNIS per i dag, og etter InteAact?
2) Hva skal vi be om av UNIS kurs som motstykke til Geo2150 regional og felt, petrologi og stratigrafi i 6. semester ved UiO Geofag?
3) Hvilke UNIS kurs ønsker UiO kvote på, og hvor mange plasser?
4) Hvordan innpasse UNIS kurs på UiO Geofag framover?

Felles synspunkter fra gruppa til punktene over:

1) UiO Geofag har mange obligatoriske kurs per i dag, som reduserer mulighetene for student mobilitet. InterAct vil fjerne mange av disse sperrene – det nye Bachelor programmet har et åpent 5. semester, og det etterfølgende Master programmet har kun 2 obligatoriske kurs, begge i 1. semester.
2) UiO Geofag foreslår at det opprettes et Bachelor program i Arktisk Geofag, hvor studentene er på UNIS i 5. og 6. semester. Relevante kurs på UNIS vil i denne graden være godkjent om en del av UiO Bachelor, som kvalifiserer til UiO Master programmet. Dermed unngår vi problemstillinger rundt innpassing av enkelte Bachelor kurs.
3) UiO Geofag ønsker 7 plasser på en Arktisk Geofag Bachelor. På Master nivå ønsker UiO Geofag 5 kvoteplasser på alle AG-kurs.
4) Det er per i dag vekttallsreduksjon ved UiO relatert til UNIS glasiologi kurs, hvor det er faglig stor overlapp. Ingen andre kurs ved UNIS har per i dag overlapp som overstiger 2 ECTS. Dermed bør alle kurs kunne forhånds-godkjennes ved UiO.

Generell kommentar fra møtet:

I. Med UNIS ambisjoner om å øke aktiviteten, er det nærliggende å se på tiltak som kan ha en rask effekt i en tidlig fase. Strakstiltak for å øke aktiviteten på UNIS vil være å arrangere UiO geo-feltkurs på Svalbard i samarbeid med UNIS.
II. UiO bør bruke en blokk-modell (5-6 ukers blokk) for Master kurs, slik UNIS gjør i sin modell. Dette vil øke muligheten for student mobilitet mot UNIS. Annik Myhre/Karianne S. Lilleøren er bedt om å bringe dette til PUU.