Årsrapport fra programsensor

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Programsensor ved
- fakultet: Det *samfunnsvitenskapelig fakultet, UiB*
- studieprogram: *Bachelorprogram i kognitiv vitenskap*

Oppnevnt for perioden: *2018 – 2021*

Denne rapporten gjelder perioden: *kalenderåret 2020*

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SUMMARY

The Cognitive Science Bachelor Programme at the University of Bergen is very good (B,95) programme, even an excellent one (A-0,05), as is the Department of Information Science and Media Studies, as is the Faculty of Social Sciences, as is the University of Bergen, and as is the Norwegian Government Ministry of Education and Research. Actually they are all A's, but the 'programsensor' wants to say "-0,05" as connected with the recommendation to look into enriched ways for Task Forces for Education, **at all levels**, to communicate even more deeply and broadly in particular across administrative units.

"*Kvalitet i alle led*" is called "En helhetlig evalueringsarkitektur" in Studentundersøkelser[1], Sak 47/12, published 2013 in the Quality Database. Its appendix, *Studentundersøkelser ved UiB, Forslag til metoder, opplegg og innretning*, includes points of action, one of which is the following:

> *1) I sterkere grad knytte undersøkelsene opp mot kvalitetssystemet, og beskrive tydeligere rutiner for oppfølging av ulike evalueringstiltak*

At that point it looks more like an intention, rather than an action point. How and where have these routines been described more clearly since 2013?

Dialogue and feedback to the Department Task Force for Education is not explicitly described in the self-assessment report. Detailed descriptions for dialogue and feedback between department and faculty task forces is not known to the 'programsensor', nor is it easy to find information on how faculty and university task forces for education describe their interaction.

As stated in 2019 report, the UiB's strategy plan says the following:

> *Through a wide range of study programmes, UiB educates students to **actively contribute to** a **society** based on knowledge, expertise and democratic values. Knowledge, **critical reflection and personal development** are hallmarks of our educational programmes. We recognise the value of high-quality education and develop innovative teaching methods which generate **positive learning outcomes** by giving students an early insight into research and collaboration. New challenges provide opportunities for complex solutions harnessing perspectives and methodologies from **multiple disciplines**. We educate the problem-solvers and critical voices of the future.*

The Cognitive Science Bachelor Programme lives up to this description. The programme indeed educates problem-solvers and critical voices of the future.

The programme kicks off with the introductory course in cognitive science (KOGVIT101). **It is recommended that the KOGVIT Task Force would discuss the motivation and value of having a course on Advance Topics in Cognitive Science at a late stage of the programme, e.g., during the 6th semester.** This obviously relates to the plan for the Cognitive Science Master Programme. Everything seems to be in place for such a programme to be defined and executed.

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[1] https://kvalitetsbasen.app.uib.no/rapport.php?rapport_id=3966

Examination results for 2020 courses can be compared with some of the corresponding examination results for 2019.

- Snitt kar. for EXFAC00SK has improved from C to B.
- Eks. meldt/Best./Snitt kar. for INF100 in 2019 was 38/27/C, in 2020 34/32/C.
- Eks. meldt/Best./Snitt kar. for INF122 in 2019 was 9/7/B, in 2020 37/26/C.
- Eks. meldt/Best./Snitt kar. for FIL in 2019 was 29/27/C, in 2020 24/20/B.
- Eks. meldt/Best./Snitt kar. for INF207 in 2019 was 3/3/C, in 2020 6/5/B.

Eks. meldt/Best./Snitt kar. for INF122 in 2019 was 9/7/B, in 2020 37/26/C.

Hovedside Kogvit-program

https://www.uib.no/studier/BASV-KOGNI

The Kogvit programme is taught in Norwegian and students must document Norwegian language proficiency to be considered for admission. The programme description is only available in Norwegian.

The programme has KOGVIT Task Force (programråd)

https://www.uib.no/infomedia/39605/programr%C3%A5d#kognitiv-vitenskap

Karakterfordeling våren og høsten 2020

Files and information provided to the 'programsensor':

DASPSTAT v20, EXFAC00SK h20, FIL105 v20, FIL121 h20, FIL121 h20, FIL129 h20, FIL129 h20, INF100 h20, INF101 v20, INF102 h20, INF112 v20, INF122 h20, INF207 h20, INF223 v20, INF227 v20, INFO110 v20, INFO125 h20, INFO134 v20, INFO135 v20, INFO162 h20, INFO180 h20, INFO212 h20, INFO216 v20, INFO262 v20, INFO284 v20, KOGVIT101 h20, LING122 h20, LOG110 v20, LOG111 v20, MAT111 h20, MAT121 v20, PSYK120 v20

Studentene fra kull 2018 er på gammel studieplan og tok da INF227 i sitt 4. semester (i tillegg til FIL105 og PSYK120), mens studentene fra 2019 var i sitt 2. semester og tok INF101, DASPSTAT, LOG110 og LOG111.

Egenevaluering

Files and information provided to the 'programsensor':

egenevaluering_kogvit101

1. Cognitive Science

The programme starts off during the 1ˢᵗ semester with the **Introduction to the Cognitive Science** (KOGVIT101) and an introduction to programming (INF100).

1.1. The introductory course - KOGVIT101

KOGVIT101 website description:

> *The purpose of this course is to give students at the bachelor's program in cognitive science a broad understanding of the field of cognitive science from an interdisciplinary perspective. The course discusses models of cognition that are based on empirical studies of human behaviour and computer models of artificial intelligence. We will look at different theories of knowledge representation, reasoning, learning and comprehension, and explore how natural language, perception, and consciousness relate to thinking. Furthermore, we look at how cognitive science has its roots in various subjects such as computer science, mathematics, information science, linguistics, psychology and philosophy, and explore the relationship between formal- and psychological models of explanation.*

The course introduces the programme very well indeed, and tunes students to think cognitively as they proceed to attend other courses in the programme. It appears like the course is designed to provide a guideline for how to comprehend the content of the subsequent courses in the programme.

However, KOGVIT101 is the only programme specific course. The KOGVIT Task Force continues to discuss how to develop and implement a Master's Programme in Cognitive Science. The *Minutes from Cognitive Science Committee September 7, 2020* points out that

> *The Master's Programme should be interdisciplinary, and the course portfolio should consist of both existing master's courses in our different departments and new program specific courses.*

A Master's Programme with new programme specific courses may call for having a cognitive science course on advanced topics at the end and conclusion of the Bachelor's Programme.

The Master's Thesis is the culmination of a Master's Programme, and essay writing connected with a later stage Advanced Course in Cognitive Science would show students what is in the pipeline as the enter a Master's programme.

A Master in Cognitive Science is also expectedly more interdisciplinary as compared to and complemented with a Master in Machine Learning. Application orientedness in cognitive science is also broader and more challenging.

1.2.   The Bachelor Programme

Programme website description:

> *Menneskeleg tenking blir til i eit samspel mellom sansing, minne, språk, problemløysing og følelsar. På bachelorprogrammet i kognitiv vitskap vil du lære å lage dataprogram som simulerer desse evnene, for å sjå om dataprogramma er i stand til å framvise åtferd som liknar menneskeleg intelligens.*
>
> *I dette studiet vil du lære korleis dei ulike evnene til den menneskelege hjernen fungerer kvar for seg og samla. Du vil lære om korleis vi menneske reflekterer over kvardagslege hendingar, korleis vi forstår språk, og korleis vi sansar verda omkring oss. Du vil også lære om formelle logiske verktøy for å representere og bruke kunnskap. Samla kan ein bruke alt dette til å lage dataprogram som har kunstig intelligens, for eksempel dataspel, intelligente assistentar på mobilen, og program som støttar medisinsk diagnose.*
>
> *Innan kognitiv vitskap diskuterer vi spørsmål som:*
>
> - *Kva er naturlege språk, og korleis forstår og nyttar menneske dei?*
> - *Kva er logisk tenking, og kan maskinar tenke?*
> - *Korleis kan du bruke symbolsk logikk til å modellere menneskeleg intelligens?*
>
> *Kunstig intelligens har blitt svært viktig i vårt samfunn, ettersom det vert nytta til å bestemme kva nyheitshistorier vi les, kva informasjon vi har tilgang til, og i framtida kanskje korleis sjåførlause bilar opererer. Derfor er det svært viktig for samfunnet at ingeniørar som byggjer desse systema, kan forstå korleis menneske vil handtere den informasjonen desse systema brukar og presenterer.*

The programme underlines human thinking, and how it emerges in interaction between sentiment, memory, language, problem solving and emotion. Further, computer programs and simulations are important as they aim at modelling human intelligence. Students will learn how humans reflect upon and react to everyday events, how humans understand language, as part of being in the world around us. Students will also learn about formal logical tools to represent and apply knowledge. Skills are related to these conceptual and formal parts then enable student e.g. to create computer programs and systems building upon artificial intelligence, gamification, mobile technology, and in general solutions that support upholding of human health and well-being[2].

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[2] On the website it reads, like it did already in 2019, more specifically "og program som støttar medisinsk diagnose", i.e., *programs and digital solutions that support medical diagnostics.*

## 2.	The programme as a whole and in parts

### 2.1.	The programme as a whole

The programme in its basic part proceeds semester by semester over two years, four semesters, each semester being 30 SP. The basic part of the programme still consists of four groups of courses with the KOGVIT101 as a dedicated introductory course for the programme as whole:

- cognitive science (KOGVIT101)
- psychology and philosophy of mind and cognition
- IT and AI, analytics, knowledge representation and computing
- language
- mathematics and logic

Specializations continue to be available in

- o informasjonsvitskap
- o informatikk
- o filosofi

each covering 60 SP. The programme structure is shown in Fig. 1. If a course is prerequisite (forkunnskap) to another, then it is given as required (krav) or recommended (tilrådd).

The basic courses in the present programme for Spring and Fall 2020, and their prerequisite dependencies, is similar as compared to 2019. INFO262 has been removed from the programme. Prerequisites for INF122 and INFO282 has been modified.

For several specialization courses, more prerequisites have been added. For instance, for INFO180, prerequisites are as follows:

> *Krav til forkunnskapar*
>
> *Programmering: Anten INFO135, INF101, INF102, INFO132+AIKI110, INFO233, INFO283, eller tilsvarande.*
>
> *Logikk: Anten INFO104, MNF130, INFO102, LOG110+LOG111, eller tilsvarande.*

Otherwise, the dependency and hierarchy of courses, given prerequisites for courses remains unchanged as compared to 2019.
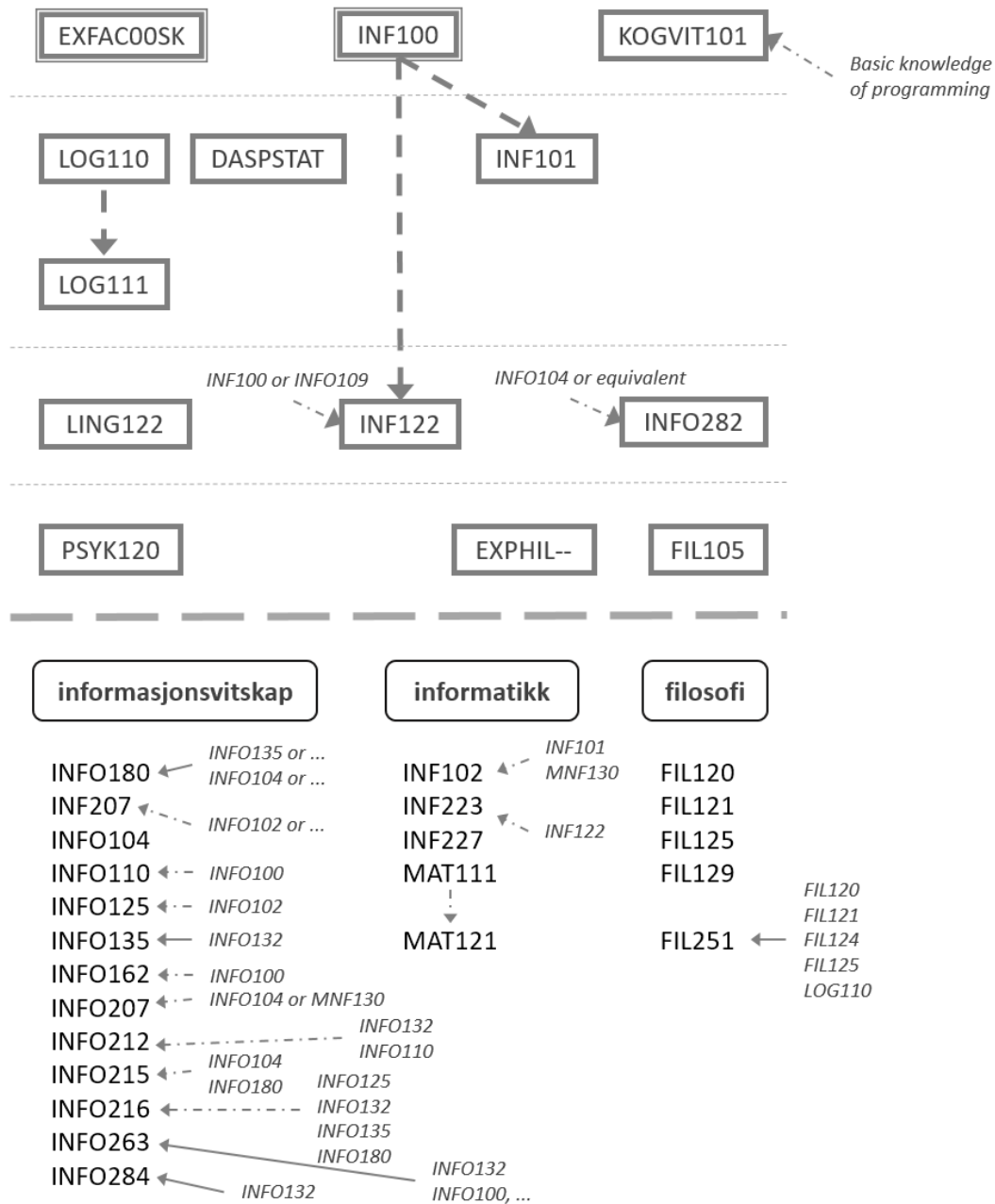

Fig. 1. Basic and specialized courses in the present programme during semesters 1-4 and 5-6.

2.2. The programme in parts

Detail concerning the programming and its parts was discussed in the 2018 report. There are no large or drastic changes to course content in the programme for 2020. Course descriptions are well structured, and include sufficient administrative detail.
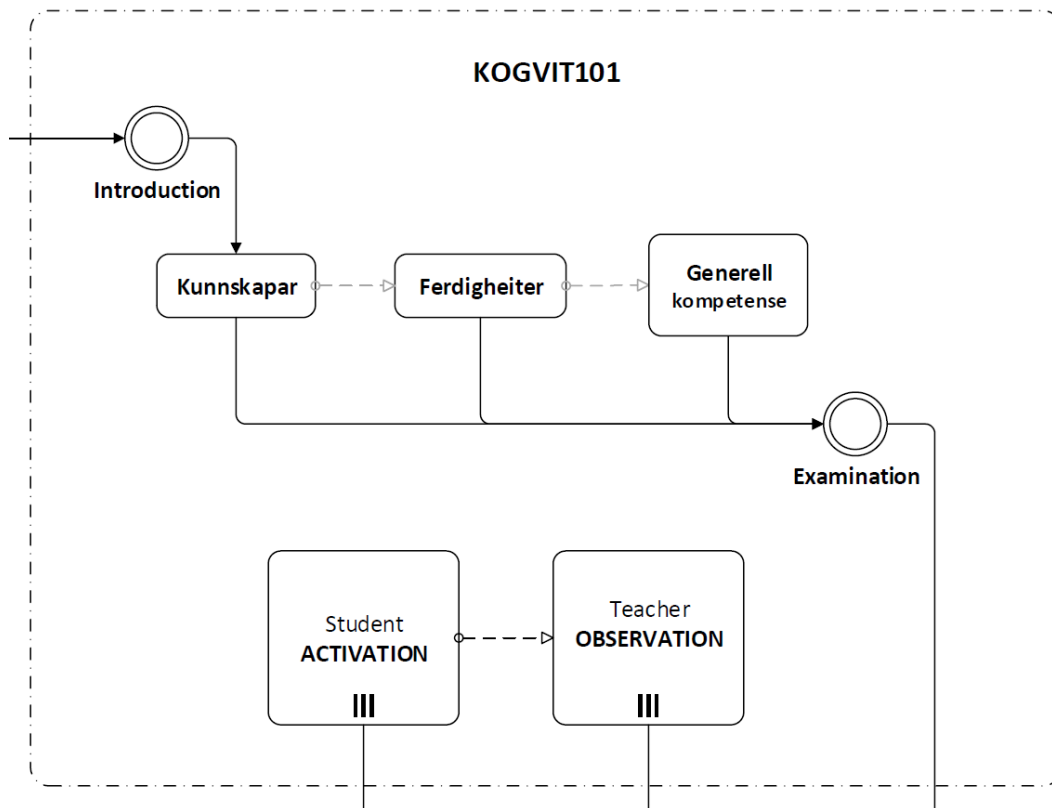
Fig. 2. An overview of the KOGVIT101 subprocess.

Looking at gradings of courses, KOGVIT students have again performed well in comparison to students in other programs.

	Cognitive Science students			ALL students in the course		
Course	Eks. meldt	Best.	Snitt kar.	Eks. meldt	Best.	Snitt kar.
EXFAC00SK	31	28	B	484	359	C
INF100	34	32	C	751	645	C
KOGVIT101 h20	36	29	B	81	65	C
LOG110	31	28	B	121	92	C
LOG111	30	26	C	37	31	C
DASPSTAT	25	24	B	45	40	B
INF101	32	25	C	311	244	C
LING122	24	22	B	59	53	B
INF122	37	26	C	244	169	C
INFO282						
PSYK120	24	21	C	25	22	C
FIL105	24	20	B	79	48	C
Spesialisering i informasjonsvitskap						
INFO180 (mand.)	11	11	C	155	149	C
INF207						
INFO104						
INFO110	3	3	B	190	166	B
INFO125	3	3	B	211	189	B
INFO135	2	2	A	206	193	A
INFO162	7	7	C	199	182	C
INFO207	6	5	B	83	70	C
INFO212	5	5	-	120	113	-
INFO215						
INFO216	1	1	A	50	32	C
INFO262	3	3	A	128	121	A
INFO263						
INFO284	4	3	B	120	87	C
Spesialisering i informatikk						
INF122	7	6	B	242	207	C
INF112	13	13	B	130	119	B
INF223	2	2	B	18	13	B
INF227	18	15	D	39	30	C
MAT111	6	4	-	411	283	-
MAT121	7	7	-	325	257	-
Spesialisering i filosofi						
FIL120						
FIL121	2	1	B	86	58	C
FIL125						
FIL129	2	2	B	55	32	C
FIL251						

Table 1. Courses, throughput and grades (2020) for 'Innføringsemne (krav 20 SP)' and 'Fagemner i kognitiv vitskap (krav 90 SP)', as well as for 'Val av spesialisering (krav 60 SP)'.

Examination results for 2020 courses can be compared with some of the corresponding examination results for 2019.

- Snitt kar. for EXFAC00SK has improved from C to B.
- Eks. meldt/Best./Snitt kar. for INF100 in 2019 was 38/27/C, in 2020 34/32/C.
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- Eks. meldt/Best./Snitt kar. for INF122 in 2019 was 9/7/B, in 2020 37/26/C.

3.   Quality assurance and task forces

The template for annual self-assessment of courses was updated in November 2020.

> *The purpose of the self-assessments is to give a short report to the programme board on how you have taught the course in order to achieve the learning outcomes of the course. The report should briefly describe the teaching plan for the course, what worked or did not work in the teaching situation and what should be done to follow this up. Recommended length of the assessment is approx. 1 page. The assessment should be sent to the programme board for discussion.*

According to the self-assessment of KOGVIT101, moving to using Zoom, because of COVID-19, was a relatively painless experience, and there seemed to be even more engagements from students. No adjustments to the teaching plan were recommended.
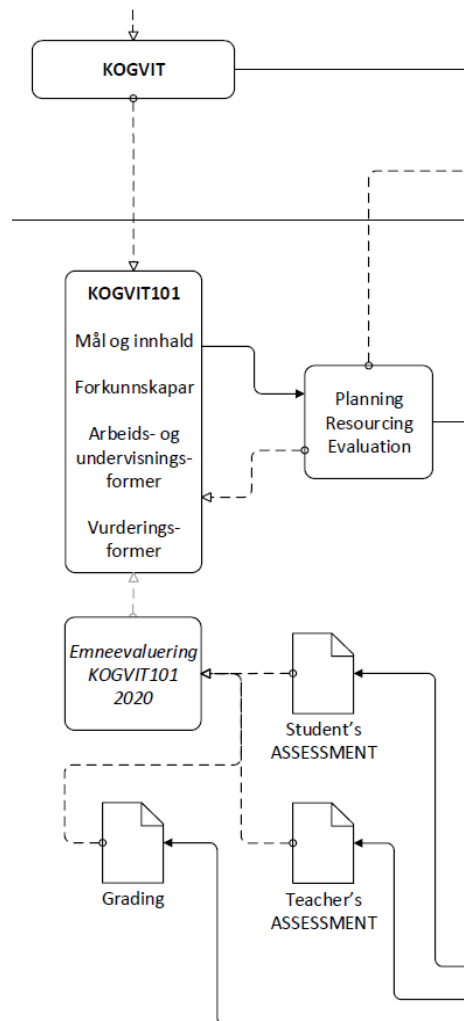

Fig. 3. The quality assurance process connected with the programme.

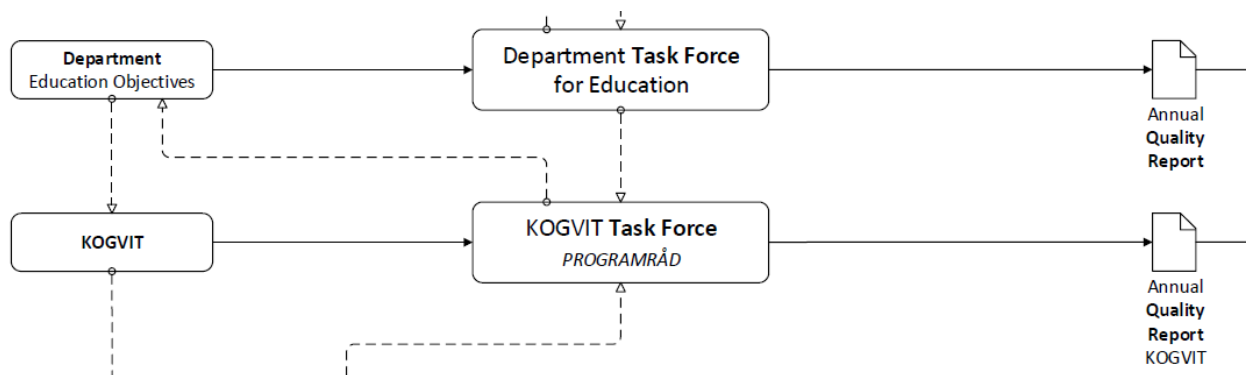The KOGVIT programme is monitored as supported by its KOGVIT Task Force (Programråd).

Fig. 4. The Department and KOGVIT Task Forces.

Dialogue and feedback to the Department Task Force for Education is not explicitly described in the self-assessment report. Detailed descriptions for dialogue and feedback between department and faculty task forces is not known to the 'programsensor', nor is it easy to find information on how faculty and university task forces for education describe their interaction.

UiB's Handbook for Quality Assurance is from 2013, and UiB's system for quality assurance was approved by NOKUT's Quality Assurance Approval Process in 2007.

> *The basis for quality in education at the University of Bergen is that education is founded on research – that is, both teachers and supervisors are themselves active researchers.*

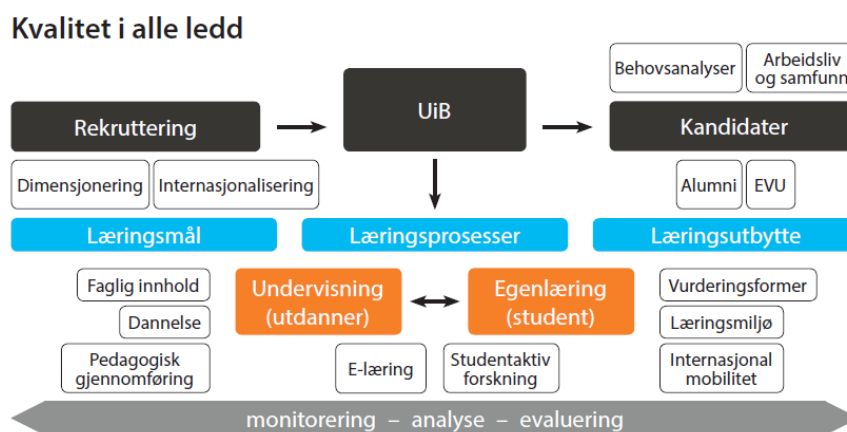Quality assurance of education at UiB is detailed "at all stages" (Kvalitet i alle led):

Fig. 5. "*Kvalitet i alle led*".

The UiB Quality Database (Studiekvalitetsbasen[3]) provides quality reports on the following levels:

- university
- faculty
- department
- programme
- course

Notably, the UiB Quality Database does not contain any university level documents for 2014-2020.

On university level, the latest quality report is from May 2013 for Spring 2012[4]. This report is basically a summary of faculty level quality reports. Feedback on assessment of learning and teaching is not explicit in this report.

"*Kvalitet i alle led*" is called "En helhetlig evalueringsarkitektur" in Studentundersøkelser[5], Sak 47/12, published 2013 in the Quality Database. Its appendix, *Studentundersøkelser ved UiB, Forslag til metoder, opplegg og innretning*, includes points of action, one of which is the following:

> *1) I sterkere grad knytte undersøkelsene opp mot kvalitetssystemet, og beskrive tydeligere rutiner for oppfølging av ulike evalueringstiltak*

How and where have these routines been described more clearly since 2013?

Sak 47/12 also states the following:

> *Generelle studentundersøkelser kan imidlertid bedre avdekke forhold knyttet til læring og miljø, og fakultetene kan følge opp overordnede funn ved å be om vurderinger av relevans for funnene i programsensorrapporter, emneevalueringer og andre lokale undersøkelser.*

It is unclear how UiB has mechanisms installed to aggregate data from programmes and departments to the faculty level, and how this possibly connects with a similar mechanism between faculty, university and NOKUT.

An overall BPMN based process view, e.g. including Task Forces at all levels, was presented in the KOGVIT 2019 report. The process view is in this report further enhanced.

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[3] https://kvalitetsbasen.app.uib.no/?
[4] https://kvalitetsbasen.app.uib.no/rapport.php?rapport_id=4138
[5] https://kvalitetsbasen.app.uib.no/rapport.php?rapport_id=3966

4.   A common assessment framework

The Common Assessment Framework (CAF) is the European model for improving public organisations through self-assessment. This report does not explicitly suggest or recommend the use of CAF, but understanding the CAF model may provide some suggestions for connecting aggregations and evaluations across al levels.

The European Public Administration Network (EUPAN) is an informal network of the Directors-General responsible for public administration in the Member States of the European Union, the European Commission (EC) and observer countries. The network works together for high-quality public services and public administrations in Europe.

> *The relevance of EUPAN is in its forward-looking and knowledge-sharing role for public administration challenges at the national and European levels. The Common Assessment Framework (CAF) is the most visible product of the network, with clear impact on how we assess and improve the quality of public administrations in Europe. The use of the model has also spread outside Europe, so the impact is even wider. In 2019 there are about 4.100 registered CAF users in European and Non-European countries.*[6]

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[6] https://www.eipa.eu/the-new-caf-2020-20-years-of-excellence-in-public-administration/