

NOKUTs tilsynsrapporter

Computer Science

Noroff University College (NUC) (Joint bachelor program with
Teesside University)

October 2015



NOKUT 

NOKUT (Norwegian Agency for Quality Assurance in Education) is the controlling authority for educational activity at all Norwegian higher educational institutions. This is achieved, among other, through accreditation of new study programs. Institutions that provide higher education have different authorization to create new study programs. If an institution want to create a provision outside of its field of authorization, it must apply to NOKUT for accreditation.

Institution:	Noroff University College (joint program with Teesside University)
Name of educational provision:	Computer Science
Degree/Credits (ECTS)	Bachelor Degree (180 ECTS)
Mode of delivery	Campus/on-line, full time/part time
Expert Committee:	Associate professor Ragnhild Kobro Runde, Universitetet i Oslo Associate professor Anne Cathrine Elster, Norges teknisk-naturvitenskapelige universitet
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Introduction

The external quality assurance performed by NOKUT consists of evaluating the institution's quality assurance systems, accreditation of new provisions and revision of accredited provisions. Universities and university colleges have different self-accrediting powers. For an institution without self-accrediting powers to establish a provision in a certain cycle an application must be made to NOKUT.

Hereby NOKUT presents the accreditation report of a Bachelor Program in Computer Science at Noroff University College (joint program with Teesside University). The expert evaluation in this report is part of the accreditation process following Noroff University College's application for accreditation of Bachelor Degree in Computer Science submitted before the application deadline on first of February 2015. This report clearly indicates the extensive evaluation performed to ensure the educational quality of the planned educational provision.

Bachelor Degree program in Computer Science at Noroff University College (joint program with Teesside University) does not fulfil the conditions for accreditation in the Regulation concerning NOKUT's supervision and control of the quality in Norwegian higher education.

Oslo, 12th October 2015



Terje Mørland
Director General

Information on accreditation of educational provisions (in Norwegian):

<http://www.nokut.no/no/Norsk-utdanning/Universitet-og-hogskole/Akkreditering-av-studietilbod/Korleis-sokje-akkreditering/>

All of NOKUT's assessment are public and this assessment along with similar quality assurance reports are available electronically on our web pages www.nokut.no/NOKUTs-publikasjoner

Content

- 1 Information regarding the applicant institution 1**
- 2 Description of procedures 1**
- 3 Expert assessment 2**
 - 3.1 Summary of the report 2
 - 3.2 Basic prerequisites for accreditation (§ 7-1)..... 3
 - 3.3 Plan for the program (§ 7-2) 8
 - 3.4 Academic environment associated with the program (§ 7-3)..... 18
 - 3.5 Supplementary provisions for joint degrees 23
- 4 Conclusion 25**
- 5 Comment from the institution 28**
- 6 Additional expert assessment..... 32**
 - 6.1 Basic prerequisites for accreditation (§ 7-1)..... 32
 - 6.2 Plan for the program (§ 7-2) 36
 - 6.3 Academic environment associated with the program (§ 7-3)..... 40
 - 6.4 Supplementary provisions for joint degrees 43
 - 6.5 Final conclusion..... 44
- 7 Decision 44**
- 8 Documentation 45**
- 9 Presentation of the Expert Committee..... 46**

1 Information regarding the applicant institution

Noroff University College is one of Norway's largest private educational institutions. The institution consists of a university college, vocational schools, online studies and secondary schools. Noroff University College (NUC) is situated in Kristiansand and shares locations with a number of vocational studies, Noroff Secondary School and the central administration office.

NUC is a university college with accredited study programs. NUC must apply to NOKUT for accreditation of study programs of all cycles.

NUC has the following accredited study programs:

- Bachelor in Interactive Media (campus program) (180 credits), 2012
- Bachelor in Interactive Media (on-line program) (180 credits), 2012
- Bachelor in Digital forensics (campus program) (180 credits), 2012
- Bachelor in Digital forensics (on-line program) (180 credits), 2012

2 Description of procedures

NOKUT makes an administrative assessment to ensure that all basic conditions for accreditation are fulfilled as expressed in the Regulation concerning NOKUT's supervision and control of the quality in Norwegian higher education.¹ (Hereafter referred to as the Quality Assurance Regulation on Higher Education.) For applications that have been approved administratively, NOKUT appoints external experts for the evaluation of the application. The external experts have declared that they are legally competent to perform an independent evaluation, and carry out their assignment in accordance with the mandate for expert assessment passed by NOKUT's board, and in accordance with the requirements for educational quality as determined by the Quality Assurance Regulation on Higher Education.

Following their assessment, the expert committee shall conclude either with a yes or no as to whether the quality of the educational provision complies with the requirements in the Quality Assurance Regulation on Higher Education. NOKUT also requests that the expert committee advise on further improvements of the educational provision. All criteria must be satisfactorily met before NOKUT accredits an educational provision.

If the conclusion reached by the expert committee is negative, the report is sent to the applicant institution, which is then given three weeks to comment. Thereafter NOKUT decides whether the comments should be sent to the committee for additional consideration. The committee is given two weeks to submit the revised assessment. The director general then reaches a final decision about accreditation.

¹ <http://www.lovdato.no/cgi-wift/ldles?doc=/sf/sf-20110127-0297.html>

3 Expert assessment

This chapter is the expert committee's assessment. The term "we" refers to the expert committee as such.

3.1 Summary of the report

The main problem with this application is that while it is an application for a joint degree between Noroff University College (NUC) and Teesside University (TU), what is actually described is an advanced exchange/credit transfer program, with an additional agreement for staff collaboration and TU giving educational advice to NUC. There is little assurance that NOKUT and/or Noroff can ensure that the overall program follows Norwegian accreditation criteria for Bachelors programs in Computer Science.

There are many positive aspects of the proposed study; however, overall, the application lacks structured organization and details that can convince the reviewers that this will be a satisfactory joint Bachelor program in Computer Science.

Several parts of the application are repetitive and also cut and paste from the other applications (e.g., the program under evaluation is also referred to as a Bachelor in Civil Engineering and courses in Data Science). The application also lacks sufficient justification for many of the choices made.

The learning outcomes are to a large extent taken directly from the Norwegian National Qualifications Framework (NQF), instead of elaborating on what learning outcomes are actually expected for this particular program. This needs to be improved, and consequently the other parts of the application dependent on the learning outcomes (e.g. the content and structure of the program, teaching and learning methods, and methods for assessment). In addition, recruitment and retention of students to satisfy a suitable learning environment as well as staffing issues are major concerns.

Note that it is not that this application is not lengthy enough, but an applications has to address the central issues, and preferably in a much more succinct and precise manner (quality over quantity). In the present form, it is difficult to assess the proposed study program because of repetitive arguments, irrelevant information and huge number of appendices. If NUC continues to hand in applications of the same format, NOKUT will administratively dismiss the applications.

We do not recommend accreditation of this program at this stage. The application should be thoroughly revised to correct all the issues raised in this report. We strongly suggest that NUC spend more time developing the study program, and hand in a new, revised application for approval at a later stage.

3.2 Basic prerequisites for accreditation (§ 7-1)

3.2.1 Requirements assessed by NOKUT

§ 7-1 (1) The following requirements laid down in the Universities and Colleges Act shall be assessed for accreditation:

- a) Internal regulations and governance
- b) Appeals committee
- c) Learning environment committee
- d) Education plan
- e) Diplomas and Diploma Supplement
- f) Quality assurance system.

Assessment

Noroff University College (NUC) is regulated by bylaws by instructions for the board and by regulations (general regulations and specific regulations for both the learning environment committee and the complaints committee), all dated January 2013. NUC's regulations are in accordance with the act relating to universities and university colleges of 1 April 2005 (hereafter "the Act"), except for the matters discussed below.

a) Internal regulations and governance

The following stipulations relating to NUC's board are not in accordance with the Act:

- According to the Act § 8-1, the board is the highest executive body and this needs to be stipulated in the bylaws (not in the instructions for the board). In addition, the board cannot be overruled by the general assembly; regulations of the Act precede company law. NUC's bylaws need to be amended accordingly.
- According to the Act § 8-1, representatives from students and staff are full members of the board with equal rights e.g. voting rights. Their rights cannot be limited to attend board meetings, speak and make proposals. NUC's bylaws paragraph 5 need to be amended accordingly.

b) Appeals Committee

The following stipulations relating to NUC's complaints committee are not in accordance with the Act:

- According to the Act § 5-1 (7) cf. §§ 4-7 (3), 4-8 (10), 4-9 (5) and 4-10 (4) and the regulation of 10 October 2005 on a national appeals body for appeals according to the Act, the national appeals body is the only body competent to process complaints on expulsion and exclusion, complaints on annulment of examinations or tests and complaints on cheating (as a second instance organ).

The NUC complaints committee is the only competent organ to process the abovementioned procedures as a *first* instance organ according to the same regulations. NUC's regulations on the complaints committee paragraph 3 need to be altered accordingly.

It is correctly stipulated that NUC's complaints committee is competent to process appeals as a second instance organ on other matters such as complaints on local admission, complaints on decisions regarding exemption from examination, complaints on approval of courses, complaints on procedural errors in exams and other matters the board refers to the complaints committee.

The complaints committee regulations paragraph 2 on the power of the administration to decide on appeals, constitutes in essence a reversal of a previous decision. Regarding the abovementioned matters where NUC's complaints committee is the only competent body according to the Act to decide as a first instance organ (and the national appeals body as a second instance organ), there is logically no possibility for NUC's administration to reverse a decision. NUC's regulations on the complaints committee paragraph 2 need to be amended accordingly.

c) Learning Environment Committee

The mandate for NUC's learning environment committee and its composition are correctly described in NUC's regulations paragraphs 13 and 44.

d) Education plan

As NUC has accredited studies on bachelor level and has not made any changes to their education plan in these applications, this criteria is not assessed here,

e) Diploma and Diploma Supplement:

The diploma has a simple design. The diploma includes the student number, which seems irrelevant. Other than that, it includes the elements recommended by The Norwegian Association of Higher Education Institutions (UHR).

According to UHR guidelines for [Diploma Supplement](#)², some formal elements are missing: a diploma supplement for a joint degree should mention that this is a joint degree and the length of the period of study abroad should be mentioned. The diploma supplement includes reference to the title "Høgskolekandidat" on page 4. This title is, since 2012, no longer part of the Norwegian degree system, and this reference should be deleted. In addition, the Diploma Supplement states "*Noroff University College is a private university college that has undergone external quality assurance by agency NOKUT in Norway in 2012 with satisfactory results.*" This is not the case, and must be removed (see assessment under f) in this section). Another minor note is that NOKUT's address is wrong.

As a joint degree, a diploma will be issued from both Teesside and NUC. It is stated in the application (page 8) that the location of study will be included in the documents. However, for the example provided in Appendix 6 (not 9 as described on page 8); neither the Diploma, the Transcript of Records nor the Diploma Supplement indicates that this is a joint degree in collaboration with TU.

² http://www.uhr.no/documents/Kort_versjon_mal_for_vitnemaal_og_vitnemaalstillegg.pdf

The Transcript of Records lacks information as to when the course was taken (semester + year). The sample is also incorrect, in that the sum of ECTS for the individual courses differ from the total given at the bottom.

Part 3.3 of the diploma supplement states that the access requirements are “General Norwegian matriculation standards with specific requirements for mathematics (see section 8)”. However, section 8 does not contain any information on the mathematics requirements.

Part 4.2 of the diploma supplement should be updated with the revised learning outcomes (see separate section).

Ernst V. Sundt’s title is differently spelled in the transcript of records versus the diploma versus the diploma supplement (rektor vs. rector vs. rektor). The correct is rector.

f) Quality assurance system

NUC is in the process of having their quality assurance system evaluated by NOKUT for the first time during autumn 2015. Thus, the quality assurance system is not assessed as part of this accreditation process.

Conclusion

No, the criterion is not fulfilled.

NUC must:

- Amend NUC’s bylaws according to the Act § 8-1, so that Noroffs board is the highest executive body and cannot be overruled by the general assembly
- Alter NUC’s bylaws paragraph 5 according to the Act § 8-1, so that student and staff representatives are full board members (with voting rights)
- Alter NUC’s complaints committee regulation paragraph 3 according to the Act § 5-1 (7) cf. §§ 4-7 (3), 4-8 (10), 4-9 (5) and 4-10 (4) and the regulation of 10 October 2005 on a national appeals body for appeals according to the Act so that the mandate is in accordance with these regulations
- Amend NUC’s complaints committee regulation paragraph 2 according to the Act § 5-1 (7) cf. §§ 4-7 (3), 4-8 (10), 4-9 (5) and 4-10 (4) so that the administrations competence to reverse previous decisions is limited to those matters where NUC’s complaints committee is a second instance appeals body.
- Amend the Diploma supplement to include the period of study at a university outside Norway and the fact that the candidate has completed a joint/multiple degree.
- Check the diplomas, diploma supplements and transcript of records for inconsistencies, factual mistakes and spelling mistakes.

3.2.2 Requirements in applicable regulations and curricula

§ 7-1 (2) Requirements of applicable regulations and curricula set by the Ministry of Education and Research must be satisfied.

Assessment

The admissions requirements must comply with the Norwegian admission regulations as dictated in “opptaksforskriften”. Admission to the provision does not refer to “opptaksforskriften”. The main entry requirements are as follows:

- 1) Equivalent of three Advanced Level subjects in the UK, with a grade requirement of C.
- 2) Norwegian certificate of upper secondary education (generell studiekompetanse) with the added qualification criteria of specialization in natural science mathematics (R1). In addition, the students have to document English language proficiency equivalent to B2 in the Common European Framework of Reference for Languages.
- 3) Other relevant international qualifications.

For applicants with Norwegian qualifications, the program requires “good grades in Mathematics R1” (p. 10). In “opptaksforskriften”, the requirement for a computer science education is either R1 or S1+S2. The application does not explain this discrepancy. In addition, the application lacks a precise definition of what is meant by “good grades”. For other applicants, there seems to be no requirement in mathematics, only “the equivalent of 3 Advanced Level subjects at grade C in the UK”. The requirement should be the same for all applicants.

The application lacks a number of requirements from “søkerveiledningen”, including the time of admission, how they rank students and how the quota for first-time applicants (førstegangsvitnemålskvote) is distributed.

Conclusion

No the requirements are not satisfactory met.

NUC must:

- Justify how the admission requirement is in accordance with “opptaksforskriften”, specifically the time of admission, how applicants are ranked and how the quota for first-time applicants is distributed.
- Have similar mathematics requirements for all applicants regardless of their previous country of studies, justify the choice, and define precisely what is meant by “good grades”.

3.2.3 Recruitment of students

§ 7-1 (3) The recruitment of students to the program should be large enough to enable the institution to establish and maintain a satisfactory learning environment and a stable program.

Assessment

The applicant has an initial intake of 10-40 full time students, later also 20 part time and 20 blended online students. According to the course structure, the students will choose either a programming or a network specialization in the second year, where three of the courses will differ. With an initial intake of possibly only 10 students, it is not clear that this will be enough to maintain a satisfactory learning environment for both specializations especially if you take into account possible dropout rates

When later opening for blended online studies, this will only be possible for the first two years, while the third year at TU is only delivered at campus. It is not clear from the application whether also part time studies are only possible at NUC, or if it is possible also at TU.

Student retention is an issue for most institutions and programs of study. NUC presents the tuition fees as an argument in favour of students committing to the study. While this may be true for a given semester/year, the same is not necessarily the case for commitment to the three-year study as a whole. Or is NUC requiring a financial commitment for the full 3 years? If so, can this be justified? How will NUC then handle unforeseen circumstances such as sickness etc.? The tuition fee may very well have the opposite effect, and motivate students to transfer to public institutions. NUC also describes how the flexible learning environment and being a small institution can promote retention. However, NUC has not provided any documentation of their current dropout rates, or how the stability is ensured for the remaining students. Charging tuition does not guarantee the quality or quantity of students nor the program, but extra care should be taken to ensure that sufficient value is given for the extra costs.

NUC states that the first year is a common year with several other NUC programs, and common for both on-campus and blended online students. While this is positive in that it gives the students a larger number of other students to interact with, it also means that the students in the first year will not get a sense of belonging to their particular program of study. This aspect is not discussed in the application.

The learning environment for part-time students is not explicitly addressed in the application. For blended on-line students, it is positive that they are able to participate both in ordinary tutorial and studio sessions via the learning management system, and also in discussions in forums, blogs etc. They will also take part in studio/laboratory at campus when required in order to ensure practical elements of the course. It is not important for the application, but when recruiting students it is important that the number and frequency of such campus activities are clearly stated.

The description of student recruitment is short, and does not argue for why students should choose this particular computer science program. The content of the program is typical of many computer science programs (at least from the typical first glance taken by most potential students), and the application should state more clearly how they intend to differentiate themselves from other similar studies.

Conclusion

No, the requirements are not satisfactory met.

NUC must:

- Describe and justify how the study program and study environment will remain stable enough despite possible dropouts and especially that the dropout rate does not become so high that they will have problems delivering what was promised to the students already admitted.
- Explain how to recruit students to this Bachelor program in particular, not just NUC in general or computer science studies in general.
- Explain how the part-time students can be guaranteed a satisfactory study environment.

NUC should:

- Consider measures to ensure the students get a feeling of belonging and class-cohesion, especially in the common subjects that are taken across study program and/or by many part-time/single subject continuing education students.

- For blended online students, be clear in their recruitment material when and how much attendance at campus is required.

3.2.4 Agreements regarding professional training

§ 7-1 (4) For programs including professional training, there must be adequate agreements regulating material issues of importance to the students.

Assessment

The application describes an optional placement year between year 2 and 3, and states that this is administered by TU and therefore falls under their rules and regulations. An optional placement year is fairly common in the UK system, and the proposed arrangement is commendable. However, on page 85 in the application it says, *placement is assessed as part of the student's degree and must meet academic requirements*. Thus, it is not evident if the placement year is optional or not. It is also unclear, *if* the placement year is optional, how students that choose not to take this extra year will obtain the same learning outcomes as those that does.

Conclusion

No, the criterion is not fulfilled.

NUC must:

- Clearly define if the placement year is optional or not
- If the placement year is obligatory, adequate agreements must be provided
- If the placement year is optional, NUC must justify that the students' achievement of the overall learning outcomes is not dependant on this.

3.3 Plan for the program (§ 7-2)

3.3.1 Program name

§ 7-2 (1) The program must have an appropriate title.

Assessment

«Bachelor in Computer Science» is an appropriate name for the program of study. However, the Norwegian name “Bachelor i Informasjonsvitenskap” is not appropriate. “Informasjonsvitenskap” usually indicates computer science towards social science, while this application describes a core computer science program, which in Norwegian should be called “Bachelor i Informatikk”.

Conclusion

No, the study program's name is not sufficiently descriptive

NUC must:

- Change the Norwegian name to “Bachelor i Informatikk”.

3.3.2 Overall learning outcome

§ 7-2 (2) The program must be described with reference to learning outcomes, cf. National Qualification Framework for Lifelong Learning. The overall learning outcome for each program, defined in knowledge, skills and general competence, shall be described.

Overall learning outcome:

Knowledge and Understanding

- K1 Knowledge of important topics, theories, issues, processes, tools and methods within the field of computing
- K2 Demonstrate familiarity with current research and development work in the computing domain and in the area of subject specialization
- K3 Demonstrate ability to update his/her knowledge in the area of subject specialization
- K4 To be aware of the need to maintain knowledge of their subject specialization
- K5 Knowledge of the history, traditions, and distinctive nature of the specialist area, and its place in society

Cognitive/Intellectual Skills

- C1 Demonstrate the ability to apply academic knowledge and relevant results of research and development work to practical and theoretical problems and make well-founded decisions and choices
- C2 Demonstrate ability to reflect upon own academic practice and professional development, identify areas for improvement, and to adapt to future tools, techniques and technology.
- C3 Demonstrate ability to find, evaluate and refer to information and scholarly subject matter and present it in a manner that sheds light on the problem
- C4 To critically select and apply a range of analytical and methodological problem solving techniques, based on research and to be able to interpret the solutions appropriately.
- C5 The ability to identify appropriate stakeholders and communicate, network and collaborate with these stakeholders at an appropriate level.

Practical/Professional Skills

- P1 Identify and appropriately act on complex ethical issues arising within academic and professional practice.
- P2 Plan, execute and manage a variety of assignments and projects over time, alone or as part of a group, to successful conclusion and in accordance with ethical requirements and principles
- P3 Communicate and exchange opinions, ideas and other subject matters such as theories, problems and solutions, with others with a background in the field, through the selection and application of appropriate methods of communication, thereby contributing to the development of good practice
- P4 Demonstrate practical and professional skills by making appropriate selections of hardware and software to inform project outcomes.
- P5 Develop a product, or solution to a problem, whose scope and depth reflects the application of specialist knowledge and skills.

Key Transferable Skills

- T1 Demonstrate the ability for self-reflection as part of a lifelong learning strategy.
- T2 Demonstrate employment potential and ability to manage professional development.
- T3 Communicate effectively orally, electronically and in writing, being able to present academic arguments in a professional manner.
- T4 Demonstrate the ability to select and apply appropriate tools, techniques and/or methodologies to deliver the project outcomes.
- T5 Recognise and evaluate factors which enhance group processes and team working, and modify and evaluate own personal effectiveness within a team.

Assessment

The learning outcomes described on page 15 and 16 are too general, and many of the bullet points are almost identical to the bachelor descriptions in National Qualification Framework (NKR). For the five knowledge outcomes, only one (K1) mentions computing, but still only as a general word. The application distinguishes between cognitive/intellectual skills and practical/professional skills. Neither of the five cognitive/intellectual outcomes are computer science specific, although C5 is not a copy of NKR but highlights stakeholders, which is important in computer science. For the five practical/professional outcomes, P1-P3 are taken from the section of general competence in NKR, with P1 being slightly more advanced than what NKR requires at bachelor level. P4 is the only outcome specific for computer science, with P5 also somewhat less general than the first three. The five key transferable skills (general competence) outcomes are not taken directly from NKR, and reflect important competences for a computer scientist. However, as they are currently formulated, they are not computer science specific.

In addition, some of the bullet points seem void of factual meaning and therefore of little use to both students, faculty staff and stakeholders. For example, K4 states that a candidate should *be aware of the need to maintain knowledge of their subject specialization*. It is not a competence as such to *be aware* of something, and we cannot see how this type of descriptor can be beneficial for the candidate or future employers. Similarly, in T2 the candidate should be able to *demonstrate employment potential and ability to manage professional development*. Again, *employment potential* is not a competence. Surely, it would be better to define some factual competences that would make the candidate attractive as a future employee/master student.

The learning outcomes should be described much more specific for this particular program in computer science.

A good starting point for developing more specific learning outcomes, could be ACMs Computer Science Curricula 2013 (<https://www.acm.org/education/CS2013-final-report.pdf>) and in particular chapter 3 “Characteristics of Graduates”.

The application offers no justification as to the choices that have been taken when designing the learning outcomes.

Defining appropriate and useful learning outcomes is a challenging task, and should be given careful consideration. However, once defined, with more specific learning outcomes, they have the potential to make it easier for potential students to decide whether to apply for the program or not, and to make it easier for NUC to use the learning outcomes as a guide for developing the content of the program (and for the committee to evaluate if the content of the study is aligned with the learning outcomes for the program).

Conclusion

No, learning outcomes are not satisfactory described.

NUC must:

- Make the description of learning outcomes more specific with respect to Computer Science.
- Justify the choices that have been taken when designing the overall learning outcomes.

3.3.3 Content and structure of program

§ 7-2 (3) The following conditions shall correspond with and be adapted to the description of the learning outcome so that the learning outcome is achieved:

- a) Content and structure of the program.

Assessment

The overall course structure of the program is fairly classical in that the first year starts with introduction to programming and other foundation courses, followed by algorithms and data structures as well as operating and file systems the second year together with more specialized program courses, with even more advanced courses the third year.

The application is somewhat inconsistent in the description of the course structure. On page 17, it is stated that the year 1 courses have received NOKUT accreditation already, while according to the detailed course descriptions in the appendix, this is not the case for all courses. Moreover, NOKUT does not accredit single courses, but complete programs. Some of the courses might be part of an already accredited program, but this is not to say that these courses by default should be considered as accredited for this particular program. A course should fit the specific program and contribute to the students fulfilling the learning outcomes for the program. On page 17, it is also listed ten topics that the students study in the second year. However, the table on the following pages show that the students are divided into two specializations, programming and networks, and that not all students will take all courses listed on page 17. Such inconsistencies make the application unnecessary difficult to read and understand.

It is positive that NUC has included courses on Problem-based Learning and Research Methodologies and Professional Aspect of Computing. However, these courses need to be tied closer together with the other course offerings, including having the other courses refer back to aspects from these more general courses. Especially the Professional Aspect of Computing course needs a more significant two-way tie-in to the Information Security course and maybe also the database course.

In the course UC1PR1101: PRG1 – Introduction to Programming, there is a mismatch between the objectives/learning outcomes which focuses solely on pseudo-code, and the content description which states that the students will learn simple programming in C, including memory management and the

use of libraries. For an introductory course in programming, NUC should consider using another language than C. As a first language, it is much more common to use Java or Python, or an educational language such as Scratch or Processing. Alternatively, the choice of C should be justified.

The Discrete Math course does not include expected topics such as recursion and induction, which are central concepts in basic computer science. Moreover, the total course content is not only limited in respect to the concepts covered but also with respect to the depth of which the selected topics are covered, yet the students are given a full 10 study point credit for this course.

Introduction to Information Security is only 5 credits. It could advantageously be merged in with Professional Aspects of Computing to ensure tighter integration. This is particularly relevant as the content of Professional Aspects of Computing is also quite security focused.

Both of the two second-year specializations include the course in Algorithms and Data Structures, which includes trees and graphs as one of the four modules. For students from the programming specialization, they have previously taken the course in object-oriented programming, where they have had an introduction to trees and graphs, while students from the network specialization have not had the same introduction previously. NUC should describe how the same course is still suitable for both student groups, without the programming students having an implicit overlap between courses or the network students having to do additional work.

The programming specialization also includes a course called Artificial Intelligence Programming. When looking at the course content, a more appropriate name seems to be “Logic Programming”. If artificial intelligence is considered an important topic in the program, NUC should also consider including other fundamental topics from what is currently often referred to as intelligent systems and machine learning.

The Operating System and Files Systems course seem to focus on how to install and upgrade such systems and not really cover the theoretical principles on which these systems are built. E.g. The central concepts of semaphores and other hand-shaking mechanisms, as well as concurrency, are not mentioned.

For the network specialization, the course in network administration seems heavily biased towards documentation. Although documentation is important, and often given too little focus, for a 4th semester course, one could have expected the students to gain more practical skills, and possibly also theoretical knowledge.

Full-time students are expected to take 4-5 courses per semester. NUC uses a block-like course structure where students take several individual courses, but need to complete a given course before starting the next course that builds on it, in addition to the studio/project courses that run throughout the academic year. This is not very well structured for part-time students. Even though NUC has this structure for each course in their course descriptions, there are no study plans or flow charts showing how part-time students can follow the program – both with respect to the fact that part-timers rarely can use 100% of their time for weeks at a time, and with respect to how it is possible to create a reasonable study plan where students at all times have enough prior knowledge. Or is NUC implying that part-time students do not sign up for the full bachelor program, but rather take one or more individual courses?

The existing description of learning outcomes as assessed above is too general to be able to make a good assessment regarding whether the content and structure of the study program is in agreement with the learning outcomes.

Overall, there seems to be a lot of issues with how the various courses in the program are organized, their contents and their specific learning outcomes. A more detailed plan regarding learning outcomes needs to be developed. The above courses are just examples of the issues we are pointing out. A similar review needs to be done for almost all courses. We have not evaluated the courses at TU, as these are not part of the NOKUT accreditation process.

We do want to mention that the idea of studio courses is really nice as long as they are tied sufficiently to the rest of the program and the learning outcomes for the given semester. Although most courses seem to be significantly lighter than comparable courses at the major Norwegian Universities, this could be compensated by more thorough reflections and papers written as part of the corresponding studio courses. However, a lot of the quality then depends on how well this is implemented.

Conclusion

No, the study programs content and structure is not satisfactory with respect to learning outcomes as it is described in the plan submitted.

NUC must:

- Show an example of a realistic study program for the part-time students.
- After making more specific learning outcomes, describe and explain how the study program's structure and content agrees with it so that that the learning outcomes are achieved.
- Change the course description of UC1PR1101 (PRG1 – Introduction to programming) so that there is a match between learning outcomes and course contents.
- Describe how the two specializations can include the same course in algorithms and data structures, while only one of the student groups having had an introduction to parts of the material in a previous course.

NUC should:

- Design a strategy to ensure that valuable aspects from the courses with focus on general/professional competence are integrated in the consecutive courses.
- Consider using another language than C in the first programming course; alternatively justify the choice of C.
- Consider revising the name and/or content of the course in artificial intelligence programming.
- Consider revising the course in network administration to focus more on practical skills, and possibly also theoretical knowledge.
- Consider extending the content of the course in discrete mathematics.
- Consider including more theoretical concepts in the operating systems course.

3.3.4 Work and teaching methods

§ 7-2 (4) The following conditions shall correspond with and be adapted to the description of the learning outcome so that the learning outcome is achieved:

- b) Work and teaching methods.

Assessment

Except from the studio courses, all courses at NUC seem to follow the same structure with 9 hours of lectures, 27 hours of tutorials and supported study, 56 hours of self-study coursework and 33 hours on assessment for a 5 ECTS course (and the double for a 10 ECTS course). For a 6-7 week course of 10 ECTS, this gives a total of 10-12 hours per week of organized teaching, which is less than many comparable studies, particularly for first-year students. In addition, it is not obvious that the same teaching and learning methods with the same distribution of hours are appropriate for all (non-studio) courses regardless of the learning outcomes and year of study.

The application describes a number of teaching and learning methods used, many with a focus on student activity and peer learning, which is very positive. For a majority of the courses, the course description states *teaching will be based on problem based learning, where students will interact with peer reviews, in addition to tutor support*. It is not clear from the application whether NUC uses the term “problem based learning” as the specific pedagogical approach PBL, or as a more general term. Other courses, including the course Problem Based Learning and Research Methodologies does not use problem-based learning, but instead state *teaching activities will be mainly instructor lead, with a number of problem solving exercises*. It is not clear whether these two sentences describe the same or different teaching methods, and in the latter case, the application lacks a justification (with respect to the learning outcomes) as to why the chosen method is the appropriate one for each course.

It is unclear how much of the coursework will be offered in-class or if larger portions of the coursework will be done through on-line teaching only. If mostly on-line teaching, it is not entirely clear whether NUC can show sufficient proof of learning outcomes achieved given all the recent issues with MOOCs. For example, being able to communicate orally is part of the learning outcome T3. The application does not state how this is achieved through the teaching and learning methods, in particular for online and part-time online students.

Conclusion

No, the study program’s work format and teaching methodology is not suitable with respect to achieving the learning outcome according to the plan.

NUC must:

- After making more specific learning outcomes, describe and explain how the chosen teaching and learning methods are appropriate for achieving the learning outcomes.
- Make explicit what they mean by “problem based learning”.

3.3.5 Examination and other types of evaluation

§ 7-2 (5) The following conditions shall correspond with and be adapted to the description of the learning outcome so that the learning outcome is achieved:

- c) Examination and other types of evaluation

Assessment

The application states (page 62) that assessment of transferable skills is embedded into ordinary course assessments, as well as in specific modules such as Enterprise Project. However, there is no course with title “Enterprise Project” in the overview of the course structure.

Most courses rely on two term papers for assessment and a reflective blog. It is positive that NUC uses non-traditional assessment methods, but some courses should also use traditional oral or written exams. The application states on page 62 that assessment will also be via formal time constrained examinations, but this is not reflected in any of the following course descriptions. Compared to NUCs general types of examination as detailed in the regulations, choosing mainly term papers and blogs, seems too narrow for the whole degree program.

The application includes the marking and assessment criteria for blog assessments, which is a good example of how such rubrics can be used for non-traditional assessment methods, as a guide to both examiners and students. It is assumed that similar rubrics are developed for other kinds of assessment, in particular for the term papers.

For the term papers, the applications provide few details regarding what these term papers are covering with respect to learning outcomes. More details are provided for the courses at TU, and we advise NUC to follow their example. Since NUC rely so heavily on term papers, it would also be prudent to question how they intend to ensure the students do their own work, and how NUC can ensure that the term papers reflect whether the student truly achieved the expected learning outcomes.

The examinations and evaluations should also for at least a significant number of basic computer science courses, such as algorithms and data structures, test whether the students truly achieved the learning outcomes expected for a bachelor's program in computer science through written examinations. In order to successfully perform their tasks in the lines of work indicated in the application, the candidates should be able to demonstrate certain basic skills in for example mathematics, statistics and choice of methodology off-hand without consulting textbooks or other means of aid.

Basing the evaluation on term papers only and no formal final exams is also questionable with respect to ensuring consistent quality across programs. In addition to what is mentioned above in connection with ensuring that the students truly achieve the learning outcomes, there needs to be a description of how external graders are involved. There needs to be at least some external grading done for quality control.

The application states that online and part-time students will have the same types of assessment as the full-time and on-campus students, but that part-time students may be set different problems to ensure they do not have an unfair advantage. It is not immediately clear from the application what this advantage would consist of. Part-time students could potentially also have a disadvantage in that they have fewer other students to discuss the assignments with. In addition, blog assessment might be problematic for these students, in particular as one of the marking criteria is interaction with others via the blog. This is problematic if part-time students may decide their own study progress, but not if there is a "class" of part-time students following a progression plan set by NUC.

Conclusion

No, the study program's examinations and evaluation procedures described in the plan are not suitable for achieving the learning outcomes.

NUC must:

- Show that they will provide exam and evaluation systems that ensure that the students achieve the learning outcomes.

- Describe how blog assessment is feasible also for part-time students.

NUC should:

- Consider written examinations with external graders (censors) for quality control.

3.3.6 Relevance of program

§ 7-2 (6) The program must have a clear academic relevance for employment and/or further studies.

Assessment

As for all core computer science studies, also at bachelor level, students should have a number of employment options after completing the program. On page 16 in the application prospective employment areas are listed as *banking, retail, as well as other engineering disciplines*. With respect to Computer Science, the examples are to *work with Computer Science consultants, contractors and government bodies*. This is very vague, and NUC should provide relevant examples of job opportunities from Norway, preferably from both public and private sector.

The application lists four relevant master programs at TU. The application lacks a clear statement as to whether the students from the joint degree will satisfy (the current) requirements of these master programs. The students should also qualify for master studies in Norway (which we believe they may), and NUC should provide examples of such.

The application describes (page 14) how all students, at all year groups, all subjects etc. are *timetabled to participate in the (TU) Schools' Employability programme to develop Graduate Skills*. While this seems very positive, the application does not describe the practicalities of how the students will participate in this during their first two years of study at NUC in Norway. In addition, it should be described what is meant by "timetabled". Is it mandatory, or does it only mean that it is organized so as not to overlap with any other scheduled study activities?

Conclusion

No, this study program does not have a clear relevance for occupational life and/or further studies.

NUC must:

- Provide examples of relevant Norwegian job opportunities.
- Provide a clearer case for how this Bachelor program will satisfy admissions criteria for the given master programs at TU, and also in Norway.
- Describe in more detail what participation in TU Schools' Employability program to develop Graduate Skills entails, and how this is organized – particularly during the first two years of study at NUC in Norway.

3.3.7 Links to research, academic- and artistic development

§ 7-2 (7) The program must have satisfactory links to research and academic and/or artistic development work, adapted to its level, scope and other characteristics.

Assessment

The application contains a very short description of the program's links to research. For this requirement, the application mainly focuses on TU and their participation in the Digital Forensics Institute. However, it is not clear how this benefits the students directly. Although the link to research is naturally more prominent in the third year, also the first two years at NUC should have adequate coupling to research. The scope of research in a general research-based program in Computer Science needs to be broad enough and cover several areas of Computer Science, not just narrow fields already covered by existing programs.

Conclusion

No, the study program does not have an adequate link to research or development work related to data science

NUC must:

- Provide evidence of satisfactory links to research and academic and/or artistic development work, adapted to its level, scope and other characteristics.

3.3.8 Student exchange and internationalization

§ 7-2 (8) The program must have student exchange and internationalization agreements, adapted to its level, scope and other characteristics.

Assessment

When it comes to student exchange, NUC has *one* legally binding student exchange agreement with Teesside University and the applicant therefore meets the minimum formal requirement.

As for internationalization arrangements, NUC has established other MoUs with other institutions as well. The expert committee compliments NUC for being very actively internationally for such a small institution. However, the committee is surprised to see that NUC has established research cooperation with other institutions but has not specified this in the agreement with Teesside University. The committee wonders whether this is an active choice, and if so – what the reasons are. The expert committee sees no reason why research cooperation with Teesside should not be part of the agreement, and recommends NUC to include it in the agreement.

Conclusion

Yes, the criterion is fulfilled.

Advise for further development:

- Establish research cooperation with Teesside University

3.3.9 Infrastructure

§ 7-2 (9) The institution must have facilities, library services, administrative and technical services, ICT resources and working conditions for the students, which are adapted to the program.

Assessment

The application contains a general description of the facilities offered by NUC, but it is not related to the bachelor degree program in Computer Science. A contract for renting a property in Kristiansand is enclosed. How much of this property will be used by this program, and how much is allocated others needs to be addressed. In particular, the application does not address the eventuality that all five applications for accreditation that NUC has presently in the NOKUT-system will be granted. This will have a major impact on the total student number (a potential increase of almost 200 students). It is unclear whether the library facilities sufficient. The application only states that they subscribe to ACM and e-books from Dawsonera, but it is unclear which and whether they are the most relevant for this program. Online students may request sections of physical books to be scanned and made available via LMS. It is not clear if there are strict requirements for online students to make such requests, and it is natural to assume that students might be more reluctant to make such requests compared to requesting a book for loan or reading at the library.

Since so much of the teaching is internet based via LMS, how much user support is provided for students that use their own laptops? In addition, what if they have general MS Windows issues, not just issues related to LMS?

It is positive that new teaching staff receives training and guidance with respect to online teaching, both the technical and pedagogical issues such as scaffolding. Similarly, students receive a number of technical guides.

Conclusion

No, the program do not have infrastructure that is relevant for the program levels, extents and specializations

NUC must:

- Justify that the institution has facilities, library services, administrative and technical services, ICT resources and working conditions for the students, which are adapted to the program, and that can accommodate the potential large number of new students.

3.4 Academic environment associated with the program (§ 7-3)

3.4.1 The composition, size and competence of the academic environment

§ 7-3 (1) The composition, size and collective competence of the relevant academic environment must be adapted to the program as described by the program description and also adequate for conducting relevant research and academic or artistic development work.

Assessment

The application gives a short description of the faculty staff involved in the program, and how these cover the core elements of the study program.

Overall, the expert committee finds the faculty staff involved in the teaching of this program to be oversubscribed, especially since most of the people listed in this application are also listed for several

of the other application submitted by NUC and/or are heavily involved in currently running programs. For example, one of the main figures in this application is set to contribute 0,5 full time equivalent (FTEs) to this program (0,2 teaching and supervision + 0,2 R&D + 0,1 other = 0,5 – and not 0,4 as table 3 suggests). However, the expert committee notes that she is also set to contribute in the other four programs that NUC is applying for accreditation of: 0,6 FTEs in the Data Science program and 0,2 FTEs in each of the three engineering programs – that is 1,2 FTEs in total before her contribution to the Computer Science program is accounted for. The committee asks for a justification of how this person's time will be distributed between the five programs and the realism of this plan. It is also questionable that only 1,9 FTEs in total is allotted for teaching the two first years at NUC.

In addition, 0,5 FTEs is allotted to a yet to be employed Associate Professor. According to the application, the recruitment process of this new staff member is dependent on NOKUT's accreditation of this study program as the contribution of this person is not essential for the *success of the program*. The expert committee does not find this satisfactory, given the very heavy workload that other staff members are already experiencing. In our experience, a recruitment process can be long and one seldom finds a perfect match. NUC therefore presently runs the risk of starting up this program without the new employee in place and/or with an employee that does not have all the desired competences to match the needed contribution to the study program. Furthermore, we see no justification of how faculty staff is adequately equipped for conducting relevant research and academic or artistic development work, especially taking into account the fact that several of the staff members are so heavily involved in teaching several courses and programs. In addition, according to table 11 on page 79 in the application, the NUC staff lack competence on core informatics such as networks and algorithms. Particularly, as networks is listed as a specialization in year 2 we would expect that this would be mentioned as a competence for at least one of the faculty staff (see section 3.4.3 for further assessment).

Conclusion

No, the composition, size and collective competence of the relevant academic environment is not adapted to the program and not adequate for conducting relevant research and academic or artistic development work as described by the program description.

NUC must:

- Justify how the faculty staff's time is distributed between different courses and programs, and evaluate the realism of this plan.
- Justify how the total of FTEs allotted to this program is sufficient.
- Justify how the faculty staff is adequately equipped for conducting relevant research and academic or artistic development work relevant for the study program.
- Start the recruitment process of a new Associate Professor to cover 0, 5 FTEs in the program.
- Justify how core informatics such as networks and algorithms is covered by the faculty staff.

3.4.2 The academic environment's external participation

§ 7-3 (2) The academic environment must actively participate in national and international collaborations and networks relevant for the program.

Assessment

The application gives, again, a short description of the national and international collaborations and networks that the faculty staff engages in, such as GCE NODE, DIGIN IT cluster and Technology Futures Research Institute. In addition, several of the academic staff have taken their Ph.Ds. in the UK and seem to have maintained collaborations with their alma mater. The applicant very poorly describes how these collaborations and networks are relevant for the study program, but the expert committee can verify that at least some of these are relevant by examining the attached CV's and documentations – and that a minimum requirement of national and international participation is fulfilled. We would like to point out, however, that a sober approach to what is defined as active networks and collaborations relevant for the study program should be attempted in future applications. For example, that faculty staff has joined different groups on LinkedIn can hardly be seen as active collaborations/networks. It is also difficult to see how such informal networks can benefit of the study program.

Conclusion

Yes, the academic environment actively participate in national and international collaborations and networks relevant for the program.

NUC should:

- Expand international relations.
- Have a more conscious approach as to how different collaborations and networks can contribute in enhancing the quality of a study program.

3.4.3 Academic staff and employment

§ 7-3 (3) At least 50 per cent of the academic FTEs allotted to the program must be staff with their primary employment at the institution. Of these, teachers with competence at the level of at least associate professor must be represented among those who teach the core elements of the program.

For the different cycles, the following additional requirements apply:

- a) For first cycle programs, at least 20 per cent of the collective academic environment must have competence at the level of at least associate professor.
- b) For second cycle programs, at least 10 per cent of the collective academic environment must be professors or docents, and an additional 40 per cent with competence at the level of at least associate professor.

Assessment

1,0 of 1,9 FTEs is occupied by persons who holds a Ph.D. Note that this metric has been based on faculty staff members that have completed a Ph.D. only. For several of the staff members there is a discrepancy between the title of the positions given in the application and those given in the corresponding CV's. The CV of one staff member (contributing 0,1 FTEs to the study program) is missing. (According to the Data Science application, the same person is listed as contributing 0,1 FTEs to that program, but the total given in table 3 here is only 0,1.) It is therefore not evident if these are hired in a position at least at the level of associate professor or not. 1,3 out of 1,9 FTEs are occupied by persons that have their main position at NUC. This shows that the minimum quantitative requirements are fulfilled.

NUC is an institution with already accredited study programs and NOKUT therefore presupposes that the institution follows the regulations concerning appointment and promotion to teaching and research posts (forskrift om ansettelse og opprykk i undervisnings- og forskerstillinger, FOR-2006-02-09-129), and that the procedures of the recruitment process are in accordance with this regulation.

According to the application, the core elements of the study program are Data Management, Data Quality, Artificial Intelligence, Software Design and Development, Legal, Ethical and Social Issues, Professionalism, Data Visualization, Big Data Analysis, Machine Learning, and Problem Solving and Reflection Skills. We note that Problem Solving and Reflection Skills is covered by faculty staff members that according to table 3 in the application are employed as Assistant Professors, but the CVs states that these are employed as lecturers and/or researchers. As mentioned in section 3.4.1, it is the expert committee's opinion that the faculty staff lacks competence on core informatics such as networks and algorithms. It is therefore not evident to the expert committee that faculty staff members with the correct formal competence (at least at the level of associate professor) covers the core elements.

As mentioned above, 0,5 FTEs is allotted to a yet to be employed Associate Professor. This person is set to cover the core elements Artificial Intelligence, Big Data Analysis and Data Visualization. NUC has other competent staff covering these core elements, so in this respect we agree that the employment of this new person is not essential for the accreditation of the study program. The expert committee is curious, however, if this is supposed to be another newly employed staff member or the same person that is scheduled to cover 0,7 FTEs in the Data Science program, as this person is listed as covering the exact same areas of expertise. If these are two different persons, the expert committee questions why NUC would choose to hire two different persons with the same expertise. If this is one and the same person, the expert committee asks for a justification on how this person's time will be distributed between the two programs (and possibly other tasks at NUC) seeing as this person is allotted 1,2 FTEs between the two programs alone.

Conclusion

No, the academic staff does not satisfy the quantified requirements.

NUC must:

- Justify that faculty staff with the right formal competence cover all core elements.
- Provide CVs of all relevant faculty staff members, and quality control the content against the application.

3.4.4 The academic environment's research and development work

§ 7-3 (4) The academic environment must be actively engaged in research, academic and/or artistic development work.

For the different cycles, the following additional requirements apply:

- a) For first cycle programs, the academic environment must have documented results at a level that is satisfactory in relation to the content and level of the program.
- b) For second cycle programs, the academic environment must have documented results at a high international level of quality, with satisfactory academic breadth.

Assessment

A few recent publications by the faculty staff are included in the application. For further information, the reader is referred to NUC's web pages and faculty staff publication lists provided in this application. The web pages contain very little information on research activities, and most of it seems related to music, gaming, e-learning and data forensics. In addition, the publication lists of the academic staff are not updated, and the applicant has not made a relevant selection of publications related to the Computer Science program. In our opinion, there are few research articles related to the field other than in the area of security, but the application contains too little information under this criterion for the expert committee to make a full assessment. In addition, the research interests listed on page 85 are more targeted towards areas less core to the computer science program. The same applies to NUC research strategy (2012-2017), where the main research areas are described as interactive media, digital security, engineering and on-line learning. None of these is core research areas for a program in computer science with specializations in programming and networks.

Conclusion

No, the academic environment's research and development work does not appear to be at a level that is satisfactory given the study programs content and level.

NUC must:

- Provide adequate indication of how they intend to provide research-based teaching across the core of computer science.

3.4.5 Supervision of professional training

§ 7-3 (5) For programs with supervised professional training, the academic environment and external mentors must have appropriate experience in the field of practice.

Assessment

The application describes an optional placement year between year 2 and 3, and states that this is administered by TU and therefore falls under their rules and regulations. An optional placement year is fairly common in the UK system, and the proposed arrangement is commendable. However, on page 85 in the application it says, *placement is assessed as part of the student's degree and must meet academic requirements*. Thus, it is not evident if the placement year is optional or not. It is also unclear, if the placement year is optional, how students that choose not to take this extra year will obtain the same learning outcomes as those that does.

Conclusion

No, the criterion is not fulfilled.

NUC must:

- Clearly state if the placement year is optional or not.
- If the placement year is obligatory, NUC must justify that the academic environment and external mentors have appropriate experience in the field of practice.

3.5 Supplementary provisions for joint degrees

All applicants applying for joint degrees must answer the supplementary criteria for joint degrees. NUC has not answered these criteria explicitly. However, some of the information can be found in other parts of the applications and appendices.

§ 7-4 (1) It must be clearly defined which parts of the program are the responsibility of each cooperating institution.

Assessment

The applications clearly states that the two first years will be given at NUC, whereas the following third year will be given at Teesside University. However, it seems that the students coming from NUC to Teesside University the third year will go through a second admission process. This is not in accordance with the regulations of a joint degree where the students are accepted to one *common* program, and not two separate programs.

It is in general difficult for the committee to see the justification for the relationship with Teesside University. What is bringing the two institutions (Teesside University and NUC) together? It is not clear to the expert committee whether it is a vision of providing good quality study programs that is driving this cooperation or if it something else?

Conclusion

No, the criterion is not fulfilled.

NUC must

- Justify that this is a joint degree that follows the regulations for joint degrees as given in the Ministerial Regulations concerning Quality Assurance and Quality Development in Higher Education and Tertiary Vocational Education.

§ 7-4 (2) There must be satisfactory procedures in place for the development of and quality assurance of the program as a whole.

Assessment

The applicant refers to the quality assurance systems at the two institutions, but fail to show how these two separate systems will work together to ensure that the joint degree has satisfactory procedures in place for development and quality assurance of the program as a whole. The consortium agreement covers overall management and financial aspects of the dual degree pathway. The governing bodies mentioned in the consortium agreement covers the administrative aspect, but according to the agreement procedures, further development of the programs is not included in the list of tasks. Planning and Development is listed as a task for the Program Director, but it is not specified what kind of development is included in his/her job description. It is therefore not evident to the expert committee that quality assurance routines for the joint degrees are adequately covered. The two partners seem to have separate quality assurance procedures but not program-specific quality assurance procedures.

Several points in the attached consortium agreement seems to be heavily skewed to the benefit of Teesside University: NUC has to follow the rules and regulations of Teesside University. It is also difficult to see that this is a joint degree or if NUC is simply just providing students to Teesside

University. There is no plan for student exchange going from UK to Norway, and the joint degree students will then only constitute of Norwegian students coming to UK for their final year of the bachelor degree. In addition, target markets for recruitment activities are all countries except from UK, which again is not a balanced agreement. The expert committee would like to remind NUC of the Ministerial Regulations concerning Quality Assurance and Quality Development in Higher Education and Tertiary Vocational Education, where one of the criteria for joint degrees in § 4.2.3 is that *students that are admitted to provisions that included as a part of a joint degree must be allowed periods of study of a certain lengths at collaborating institutions*. As long as there are no plans for UK student coming to NUC for the first two years, the expert committee cannot see that this is in fact a joint degree.

The agreement also states that NUC may at some point deliver 100% of the teaching, in which case no TU degree will be awarded. Again, this should not be the case for a joint degree.

It is our opinion that this collaboration looks more like an articulation agreement rather than an actual consortium agreement for a joint degree. It is indeed a pathway for the Norwegian students to obtain a bachelor degree in computer science, but it is hardly a joint endeavour.

Conclusion

No, the criterion is not fulfilled.

NUC must

- Describe and justify the routines for development and quality assurance for the program as a whole.
- Justify that these routines are satisfactory
- Justify that both partner institutions are equally involved in the process.

§ 7-4 (3) The constituent parts of the program must make up a whole, as seen in relation to the program's level and learning outcomes

Assessment

As mentioned in sections 3.3.2 and 3.3.3, the overall learning outcomes are not adequately developed and the implementation of these in the programs' content and structure is not satisfactory.

Consequently, the expert committee is not convinced that the constituent parts of the program make up a whole.

Conclusion

No, the criterion is not fulfilled.

NUC must

- Describe and justify how the constituent parts of the program make up a whole, as seen in relation to the program's level and learning outcomes.

4 Conclusion

Based on the written application with attached documentation, the expert committee concludes the following:

The committee does not recommend accreditation of the joint bachelor degree in Computer Science at Noroff University College and Teesside University.

The expert assessment states which demands the institution is required to meet in order to achieve accreditation. In addition, the committee has provided advice for the further development of this study program.

The following requirements are not satisfied:

- §7-1 (1) Requirements laid down in the Universities and Colleges Act must be satisfied.
- § 7-1 (2) Requirements of applicable regulations and curricula set by the Ministry of Education and Research must be satisfied.
- § 7-1 (3) The recruitment of students to the program should be large enough to enable the institution to establish and maintain a satisfactory learning environment and a stable program.
- § 7-1 (4) For programs including professional training, there must be adequate agreements regulating material issues of importance to the students.
- § 7-2 (1) The program must have an appropriate name.
- § 7-2 (2) The program must be described with reference to learning outcomes, cf. National Qualification Framework for Lifelong Learning. The overall learning outcome for each program, defined in knowledge, skills and general competence, shall be described.
- § 7-2 (3) The following conditions shall correspond with and be adapted to the description of the learning outcome so that the learning outcome is achieved: Content and structure of the program.
- § 7-2 (4) The following conditions shall correspond with and be adapted to the description of the learning outcome so that the learning outcome is achieved Work and teaching methods.
- § 7-2 (5) The following conditions shall correspond with and be adapted to the description of the learning outcome so that the learning outcome is achieved Examination and other types of evaluation.
- § 7-2 (6) The program must have a clear academic relevance for employment and/or further studies.
- § 7-2 (7) The program must have satisfactory links to research and academic and/or artistic development work, adapted to its level, scope and other characteristics.
- § 7-2 (8) The program must have student exchange and internationalization agreements, adapted to its level, scope and other characteristics.
- § 7-2 (9) The institution must have facilities, library services, administrative and technical services, ICT resources and working conditions for the students, which are adapted to the program.
- § 7-3 (1) The composition, size and collective competence of the relevant academic environment must be adapted to the program as described by the program description and also adequate for conducting relevant research and academic or artistic development work.

- § 7-3 (3) At least 50 per cent of the academic FTEs allotted to the program must be staff with their primary employment at the institution. Of these, teachers with competence at the level of at least associate professor must be represented among those who teach the core elements of the program.
- § 7-3 (4) The academic environment must be actively engaged in research, academic and/or artistic development work.
- § 7-3 (5) For programs with supervised professional training, the academic environment and external mentors must have appropriate experience in the field of practice.

Supplementary provisions for the accreditation of a program or parts of a program that are constituent parts of a joint degree:

- § 7-4 (1) It must be clearly defined which parts of the program are the responsible of each cooperating institution.
- § 7-4 (2) There must be satisfactory procedures in place for the development of and quality assurance of the program as a whole.
- § 7-4 (3) The constituent parts of the program must make up a whole, as seen in relation to the program's level and learning outcomes.

The following requirements must be satisfied in order to achieve accreditation:

- Amend NUC's bylaws according to the Act § 8-1, so that Noroffs board is the highest executive body and cannot be overruled by the general assembly
- Alter NUC's bylaws paragraph 5 according to the Act § 8-1, so that student and staff representatives are full board members (with voting rights)
- Alter NUC's complaints committee regulation paragraph 3 according to the Act § 5-1 (7) cf. §§ 4-7 (3), 4-8 (10), 4-9 (5) and 4-10 (4) and the regulation of 10 October 2005 on a national appeals body for appeals according to the Act so that the mandate is in accordance with these regulations
- Amend NUC's complaints committee regulation paragraph 2 according to the Act § 5-1 (7) cf. §§ 4-7 (3), 4-8 (10), 4-9 (5) and 4-10 (4) so that the administrations competence to reverse previous decisions is limited to those matters where NUC's complaints committee is a second instance appeals body.
- Amend the Diploma supplement to include the period of study at a university outside Norway and the fact that the candidate has completed a joint/multiple degree.
- Check the diplomas, diploma supplements and transcript of records for inconsistencies, factual mistakes and spelling mistakes.
- Justify how the admission requirement is in accordance with "opptaksforskriften", specifically the time of admission, how applicants are ranked and how the quota for first-time applicants is distributed.
- Have similar mathematics requirements for all applicants regardless of their previous country of studies, justify the choice, and define precisely what is meant by "good grades".
- Describe and justify how the study program and study environment will remain stable enough despite possible dropouts and especially that the dropout rate does not become so high that they will have problems delivering what was promised to the students already admitted.
- Explain how to recruit students to this Bachelor program in particular, not just NUC in general or computer science studies in general.

- Explain how the part-time students can be guaranteed a satisfactory study environment.
- Clearly define if the placement year is optional or not
- If the placement year is obligatory, adequate agreements must be provided
- If the placement year is optional, NUC must justify that the students' achievement of the overall learning outcomes is not dependant on this.
- Change the Norwegian name to "Bachelor i Informatikk".
- Make the description of learning outcomes more specific with respect to Computer Science.
- Justify the choices that have been taken when designing the overall learning outcomes.
- Show an example of a realistic study program for the part-time students.
- After making more specific learning outcomes, describe and explain how the study program's structure and content agrees with it so that that the learning outcomes are achieved.
- Change the course description of UC1PR1101 (PRG1 – Introduction to programming) so that there is a match between learning outcomes and course contents.
- Describe how the two specializations can include the same course in algorithms and data structures, while only one of the student groups having had an introduction to parts of the material in a previous course.
- After making more specific learning outcomes, describe and explain how the chosen teaching and learning methods are appropriate for achieving the learning outcomes.
- Make explicit what they mean by "problem based learning".
- Show that they will provide exam and evaluation systems that ensure that the students achieve the learning outcomes.
- Describe how blog assessment is feasible also for part-time students.
- Provide examples of relevant Norwegian job opportunities.
- Provide a clearer case for how this Bachelor program will satisfy admissions criteria for the given master programs at TU, and also in Norway.
- Describe in more detail what participation in TU Schools' Employability program to develop Graduate Skills entails, and how this is organized – particularly during the first two years of study at NUC in Norway.
- Provide evidence of satisfactory links to research and academic and/or artistic development work, adapted to its level, scope and other characteristics.
- Justify that the institution has facilities, library services, administrative and technical services, ICT resources and working conditions for the students, which are adapted to the program, and that can accommodate the potential large number of new students.
- Justify how the faculty staff's time is distributed between different courses and programs, and evaluate the realism of this plan
- Justify how the total of FTEs allotted to this program is sufficient.
- Justify how the faculty staff is adequately equipped for conducting relevant research and academic or artistic development work relevant for the study program.
- Start the recruitment process of a new Associate Professor to cover 0,5 FTEs in the program.
- Justify how core informatics such as networks and algorithms is covered by the faculty staff.
- Justify that faculty staff with the right formal competence cover all core elements.
- Provide CVs of all relevant faculty staff members, and quality control the content against the application.

- Provide adequate indication of how they intend to provide research-based teaching across the core of computer science.
- Clearly state if the placement year is optional or not.
- If the placement year is obligatory, NUC must justify that the academic environment and external mentors have appropriate experience in the field of practice.
- Justify that this is a joint degree that follows the regulations for joint degrees as given in the Ministerial Regulations concerning Quality Assurance and Quality Development in Higher Education and Tertiary Vocational Education.
- Describe and justify the routines for development and quality assurance for the program as a whole.
- Justify that these routines are satisfactory
- Justify that both partner institutions are equally involved in the process.
- Describe and justify how the constituent parts of the program make up a whole, as seen in relation to the program's level and learning outcomes

The committee offers the following advice to develop the study program further.

- Consider measures to ensure the students get a feeling of belonging and class-cohesion, especially in the common subjects that are taken across study program and/or by many part-time/single subject continuing education students.
- For blended online students, be clear in their recruitment material when and how much attendance at campus is required.
- Design a strategy to ensure that valuable aspects from the courses with focus on general/professional competence are integrated in the consecutive courses.
- Consider using another language than C in the first programming course; alternatively justify the choice of C.
- Consider revising the name and/or content of the course in artificial intelligence programming.
- Consider revising the course in network administration to focus more on practical skills, and possibly also theoretical knowledge.
- Consider extending the content of the course in discrete mathematics.
- Consider including more theoretical concepts in the operating systems course.
- Consider written examinations with external graders (censors) for quality control.
- Establish research cooperation with Teesside University
- Expand international relations
- Have a more conscious approach as to how different collaborations and networks can contribute in enhancing the quality of a study program

5 Comment from the institution

NUC received the report from Nokut in beginning of July and is responding with our comments within the extended time limit of 14 August 2015.

The committee did not recommend accreditation of the Bachelor degree in Computer Science at Noroff University College. NUC has carefully gone through the report and provided justifications and made modifications.

1. NUC is of the opinion that conditional approval can be granted since the only major outstanding issue is the recruitment of one academic staff. The recruitment process has been started, and information will be submitted to Nokut as soon as the employment contract is signed. As agreed with Nokut in telephone meeting, the detailed response to each point raised from Nokut and the Committee in the joint "tilsynsrapport" are given in appendix 1 to this report. The main reasons for our conclusion are:
2. The Committee require justification to many issues in our application. NUC emphasis is to give the reasons for a solution and then describe the solution. NUC has in appendix 1 further clarified, explained and given reasons to all the points where the Committee ask for justification.
3. The NUC Board has agreed to all the required modifications. This is documented in minutes from the Board.
4. NUC comply with "opptaksforskriften" through participation in Samordna Opptak.
5. NUC have modified the general learning outcomes to make them more specific but still keeping the close relationship to NKR and the philosophy to harmonize and standardize the learning outcomes as much as possible. NUC have evaluated all detailed learning outcomes to ensure that they comply with the general learning outcomes modified according to the recommendation from the committee. As a result no modifications were required to the detailed learning outcomes. One word in a single course level outcome was modified as a result of changing of C to Python.
6. NUC have accommodated modifications to the program structure where appropriate. See appendix 1.
7. The Committee concerns with NUC part-time delivery are technical and have been covered in attachment 1 and 7. NUC will not introduce part-time studies until experience is gained with full-time offering.
8. The committee argues: "Several parts of the application are repetitive and also a bit cut and paste from the guideline rather than providing detailed insight regarding accomplishing the goals". NUC follows the Nokut template closely. This template is based on the use of a huge number of appendixes. Nokut has previously advised NUC that documents (in particular application and study plan) should be so complete that there should be no need to look up other documents while reading it. That can only be achieved with a certain repetition of content across documents.
9. The design of a consortium for the administration of the joint degree follow best practise in the field, and is based on the two existing QA systems at TU and NUC with a balanced overarching administrative system.
10. The recruitment of the missing academic member of staff has started and the present situation should allow conditional approval. Other comments regarding our staffing are considered to be minor and seem partly to be misunderstandings.

We have accommodated modifications as required by the committee, provided the appropriate level of information, and given good reasons for our choices so that conditional approval can be granted.

Basic Prerequisites

The Committee has highlighted issues in our regulatory documents which neither Nokut nor any previous committee has raised concerns over. It has already been decided by our Board to give staff and student representatives full rights and responsibilities, amend bylaws and complain committee documentation. (Our reason for not giving student and staff full rights before has been to protect these representatives from potential financial consequences that board members may face.) We would like an explanation from Nokut on the issue of reversing complaint decisions, which we do not understand, maybe due to that we have not encountered the need for this. We kindly ask if Nokut could provide a sample text that we can and will incorporate in the Complain Committee regulation.

Recruitment of students

NUC comply with “opptaksforskriften” through our participation in SO. The Committee problematize our recruitment system and are concerned with NUC’s capacity to address the situation where there are too many applications or there are too few students e.g. due to dropout. In educational institutions there will always be challenges related to recruitment. In accordance with Nokut requirements, we have stated our ambition to recruit 10 - 40 students. This is considered a sufficient number to create a working environment where students are able to discuss problems and engage in peer-to-peer learning in tutorial sessions. We have a robust QA system, a competent management and a qualified academic staff that will handle deviations. Up until now, NUC has always been able to offer all qualified applicants a place. Should we come into a situation where we receive more qualified applications than we can handle, the ranking will be based on MATRS (SO term for GSK + Math R1) results in combination with our impression from the interview of each candidate. In the interview we may advise the students to select other study programs or consider our vocational school should we find them not suited or qualified.

Comments to the operation

The Committee asks us to describe and justify a number of issues. These are dropouts; learning environment, marketing, recruitment-process and a new requirement of minimal limit of students. We are aware of these important parts in running an education institution, but consider all these descriptions sufficiently given in the submitted documentation and the appendixes to this report. As part of our QA we are regularly revising and improving on our internal processes, learning environment and delivery. We can document actual dropout after 3 years of operation, which is satisfactory. We can also report from our student surveys that online students are marginally more satisfied than campus based students. NUC is focused on management by objectives (see our QA system) and believe in letting the board and management handle the operations according to laws and regulations.

Overall learning outcome

The Committee argues that the general learning outcomes are too general. NUC has revised the learning outcomes and made them more specific without changing the general intention. The learning outcomes are modified to be sufficiently general to communicate the qualifications to industry and society at large and specific enough for the students to understand the direction and content of the program. The general learning outcomes should be seen in relation to the specific learning outcomes given in each course description and the mapping given in the application. We also argue that they are similar in style to comparable courses offered at other Norwegian institutions. We also argue that we try to follow the approach given in National guidelines for engineering education developed by NRT.

Here they argue that the learning outcome should as far as possible be standardized independent of institution. We support their argument and have therefore tried to be as close to description in NKR as possible. The strength of this harmonized approach is that industry will recognize them, it will make student transfer between academic institutions easier and make choice of education easier for the students.

Content and structure of program

We are pleased to see that the Committee has no severe structural comments to our program. NUC has taken note of all the comments from the committee and made modifications where it is appropriate. See appendix 1.

Work and teaching methods

With our modified learning outcomes NUC are in compliance.

Examination and other types of evaluation

The answers to the committee are found and covered in each course descriptor where the student evaluation of the courses is highlighted.

Relevance of program

NUC has provided the information that the Committee is requesting. See Appendix 1.

Infrastructure

NUC has the basic infrastructure in place with options to expand and increase capacity when needed. The infrastructure has proven its functionality over the last 3 years. See appendix 1 for details.

The composition, size and competence of the academic environment

The Committee problematize the allocation of staff time, and correctly observes that the same allocation of staff-time is repeated in several programs. The reason for this is that many courses are taught in several programs in parallel in such a way that the tutoring staff, and not the lecturing staff mainly covers the increased workload with large student groups. The committee should also note that lectures are recorded and can be viewed and reviewed at any time.

NUC has used the Nokut template in Table 3 (see appendix 7 for revised table).

NUC is continually working with the staffing issues and the recruitment process of staff is on-going. The financial reality of private institutions is that the employment of additional staff is at least partially dependent on program approval. An updated staffing table, CV and publication list is attached in appendix 9,10,11.

The academic environment's external participation

NUC takes note of good advice from the committee and will work to continually strengthen our external collaboration with international partner universities, industry clusters and individual companies. See details in appendix 1.

The academic environment's research and development work

All teaching is research based in that staff will include their recent work as examples in the lecture sessions. Guest lectures from researchers take place during the year. Current research papers are referenced and discussed in class. Students are involved in research activities and are encouraged to develop ideas and to write papers themselves.

Supplementary provisions for joint degrees

Each partner will operate its own quality assurance processes, utilising procedures and systems at their premises. We recognise the need for an overarching coordinating body and sub- management structures to ensure that good student experience is delivered seamlessly throughout all years of the program regardless of location of teaching delivery.

The parties have equal rights and responsibilities in the management of the program. There is a joint chair in order to ensure the balance.

Kristiansand 14 August 2015 Ernst Sundt, Rector NUC.

6 Additional expert assessment

6.1 Basic prerequisites for accreditation (§ 7-1)

6.1.1 Requirements assessed by NOKUT

§ 7-1 (1) The following requirements laid down in the Universities and Colleges Act shall be assessed for accreditation:

- a) Internal regulations and governance
- b) Appeals committee
- c) Learning environment committee
- d) Education plan
- e) Diplomas and Diploma Supplement
- f) Quality assurance system.

NUC must:

- Amend NUC's bylaws according to the Act § 8-1, so that Noroffs board is the highest executive body and cannot be overruled by the general assembly.

- Alter NUC's bylaws paragraph 5 according to the Act § 8-1, so that student and staff representatives are full board members (with voting rights).
- Alter NUC's complaints committee regulation paragraph 3 according to the Act § 5-1 (7) cf. §§ 4-7 (3), 4-8 (10), 4-9 (5) and 4-10 (4) and the regulation of 10 October 2005 on a national appeals body for appeals according to the Act so that the mandate is in accordance with these regulations.
- Amend NUC's complaints committee regulation paragraph 2 according to the Act § 5-1 (7) cf. §§ 4-7 (3), 4-8 (10), 4-9 (5) and 4-10 (4) so that the administration's competence to reverse previous decisions is limited to those matters where NUC's complaints committee is a second instance appeals body.
- Amend the Diploma supplement to include the period of study at a university outside Norway and the fact that the candidate has completed a joint/multiple degree.
- Check the diplomas, diploma supplements and transcript of records for inconsistencies, factual mistakes and spelling mistakes.

Assessment

a) Internal regulations and governance

NUC held an extraordinary board meeting of which the minutes are sent as appendix 2 to NOKUT.

In this board meeting, the NUC board decided that student and staff representatives are registered as full members of the board, and that the NUC bylaws will be amended so that NUC's board is the highest executive body and cannot be overruled by the general assembly.

However, since NUC AS is a corporation, § 5-18 of the private limited companies act ("aksjeloven" in Norwegian) applies. Accordingly, only NUC's general assembly has the competency to amend NUC's bylaws, not NUC's board. The act relating to universities and university colleges ("the Act") only precedes the private limited companies act on those issues it regulates (e.g. the Act prescribes in § 8-1 that the board is the highest executive body, a stipulation which precedes the private limited companies act). The Act does not regulate the competency of a board to amend a corporation's bylaws, thus § 5-18 of the private limited companies act applies.

For the amendments to NUC's bylaws to be valid, they need to be decided upon by NUC's general assembly.

In addition, NOKUT requires to be presented the amended bylaws, as this is one of the obligatory appendices to an application for accreditation.

b) Appeals Committee

NUC's board decided to alter the complaints committee regulation in accordance with NOKUT's remarks on the legal requirements prescribed by the Act.

NOKUT requires to be presented NUC's amended complaints committee regulation, as this is one of the obligatory appendices to an application for accreditation.

NUC commented in its response to the report that it does not understand the issue of reversing complaint decisions. In the complaints committee regulations paragraph 2, it states: "*If the*

administration at Noroff has no doubts that a complaint should be upheld, the decision on the complaint can be made by the administration itself. The Administration must inform the Noroff Board about decisions taken in relation to complaints.”

However, on those matters where the NUC’s complaints committee is the only competent body to decide as a first instance organ according to the Act, it is also the only competent body to reverse (“omgjøre” in Norwegian) its own decisions, according to § 35 of the public administration act (“forvaltningsloven” in Norwegian). Therefore, NUCs administration cannot be accorded the power to decide upon complaints or reverse decisions made by the complaints committee.

The diploma has been changed to include the reflect the fact that this is a joint degree. The sample transcript still lacks information as to which term each individual course is taken, and the sum of ECTS is wrong.

Conclusion

No, the criterion is not fulfilled.

6.1.2 Requirements in applicable regulations and curricula

§ 7-1 (2) Requirements of applicable regulations and curricula set by the Ministry of Education and Research must be satisfied.

NUC must:

- Justify how the admission requirement is in accordance with “opptakskravet”, specifically the time of admission, how applicants are ranked and how the quota for first-time applicants is distributed.
- Have similar mathematics requirements for all applicants regardless of their previous country of studies, justify the choice, and define precisely what is meant by “good grades”.

Assessment

NUC has described that they comply with “opptakskravet” with MATRS (mathematics R1) and that their local intake will follow the same procedure. They have adjusted the requirement of “good grades” in mathematics to a passing grade in R1 (or similar), and that the requirement will be the same for all applicants.

Conclusion

Yes, the criterion is fulfilled.

6.1.3 Recruitment of students

§ 7-1 (3) The recruitment of students to the program should be large enough to enable the institution to establish and maintain a satisfactory learning environment and a stable program.

NUC must:

- Describe and justify how the study program and study environment will remain stable enough despite possible dropouts and especially that the dropout rate does not become so high that they will have problems delivering what was promised to the students already admitted.
- Explain how to recruit students to this Bachelor program in particular, not just NUC in general or computer science studies in general.
- Explain how the part-time students can be guaranteed a satisfactory study environment.

Assessment

NUC states that once a program is started, they are committed to offer all 3 years of education, and that sharing courses between programmes helps secure a robust study environment. However, the issue of a satisfactory learning environment for the specialization courses with a low intake and possible dropouts is not addressed.

The bachelor program is said to have its own marketing activities as part of the general marketing plan. The committee agrees that the details of this can be left to NUC, but strongly recommends that NUC has marketing material where the similarities and differences with respect to the other programmes at NUC is clearly described.

NUC states that student evaluations show that online students are marginally more satisfied than campus students are. The study environment for part-time students is not described as they do not plan to offer part-time studies until they have experience with full-time students. However, the application concerns also part-time studies which means that NUC have to consider (and describe) also the study environment for part-time students.

Conclusion

No, the criterion is not fulfilled.

6.1.4 Agreements regarding professional training

§ 7-1 (4) For programs including professional training, there must be adequate agreements regulating material issues of importance to the students.

NUC must:

- Clearly define if the placement year is optional or not.
- If the placement year is obligatory, adequate agreements must be provided.
- If the placement year is optional, NUC must justify that the students' achievement of the overall learning outcomes is not dependant on this.

Assessment

The placement year is said to be optional, and not necessary for achieving the learning outcomes of the program.

Conclusion

NUC has clarified that the criterion is not relevant.

6.2 Plan for the program (§ 7-2)

6.2.1 Program name

§ 7-2 (1) The program must have an appropriate title.

NUC must:

- Change the Norwegian name to “Bachelor i Informatikk”.

Assessment

The Norwegian name has been changed to “Bachelor i informatikk” as advised by the committee.

Conclusion

Yes, the criterion is fulfilled.

6.2.2 Overall learning outcome

§ 7-2 (2) The program must be described with reference to learning outcomes, cf. National Qualification Framework for Lifelong Learning. The overall learning outcome for each program, defined in knowledge, skills and general competence, shall be described.

NUC must:

- Make the description of learning outcomes more specific with respect to Computer Science.
- Justify the choices that have been taken when designing the overall learning outcomes.

Assessment

The learning outcomes has been made more specific for computer science, but the issues with respect to e.g. K4 and T2 remains.

NUC states that they have stayed as close to NKR as possible, as they have adopted the philosophy behind “Rammeplan for Ingeniørutdanning” where ideally the learning outcomes should be independent of institution. However, the proposed study in computer science is not in the scope of this “rammeplan”. The committee does not agree with that the learning outcomes should be independent of institution, but rather believes that good descriptions of learning outcomes should highlight both the similarities, as well as the differences between different computer science studies, preferably with the emphasis on the latter. Further justification of the learning outcomes is not given.

Conclusion

No, the criterion is not fulfilled.

6.2.3 Content and structure of program

§ 7-2 (3) The following conditions shall correspond with and be adapted to the description of the learning outcome so that the learning outcome is achieved:

d) Content and structure of the program.

NUC must:

- Show an example of a realistic study program for the part-time students.
- After making more specific learning outcomes, describe and explain how the study program's structure and content agrees with it so that that the learning outcomes are achieved.
- Change the course description of UC1PR1101 (PRG1 – Introduction to programming) so that there is a match between learning outcomes and course contents.
- Describe how the two specializations can include the same course in algorithms and data structures, while only one of the student groups having had an introduction to parts of the material in a previous course.

Assessment

NUC has provided a study plan for part-time students studying 50%. The plan is essentially the same as for full-time students, only stretched out in time. To solve the issue of courses given in block-structure, part-time students are said to typically be online students. As NUC will not offer part-time studies for the first years, the committee has not evaluated this further. However, the application concerns also part-time studies which means that NUC have to consider (and describe) also the study environment for part-time students

The PRG1 course has been changed as advised by the committee.

NUC has not answered the issue of how the two specializations can include the same course in algorithms and data structures when the programming students have had part of the material before (introduction to trees and graphs).

As the criterion for the overall learning outcomes is not fulfilled, it is difficult to assess the connection between the learning outcomes and the content. The learning outcomes must be revised and the content must fit the new learning outcomes. This criterion is not fulfilled.

Conclusion

No, the criterion is not fulfilled.

6.2.4 Work and teaching methods

§ 7-2 (4) The following conditions shall correspond with and be adapted to the description of the learning outcome so that the learning outcome is achieved:

e) Work and teaching methods.

NUC must:

- After making more specific learning outcomes, describe and explain how the chosen teaching and learning methods are appropriate for achieving the learning outcomes.
- Make explicit what they mean by “problem based learning”.

Assessment

NUC provides little new information under this criterion. As the criterion for the overall learning outcomes is not fulfilled, this criterion is not fulfilled either. The original conclusion therefore is unaltered.

Conclusion

No, the criterion is not fulfilled.

6.2.5 Examination and other types of evaluation

§ 7-2 (5) The following conditions shall correspond with and be adapted to the description of the learning outcome so that the learning outcome is achieved:

f) Examination and other types of evaluation

NUC must:

- Show that they will provide exam and evaluation systems that ensure that the students achieve the learning outcomes.
- Describe how blog assessment is feasible also for part-time students.

Assessment

Under this criterion, NUC mainly refers to the original application previously assessed by the expert committee. The expert committee is not able to see that NUC has provided any new information and argumentation to convince the committee to change its original conclusion. The original conclusion therefore is unaltered.

Conclusion

No, the criterion is not fulfilled.

6.2.6 Relevance of program

§ 7-2 (6) The program must have a clear academic relevance for employment and/or further studies.

NUC must:

- Provide examples of relevant Norwegian job opportunities.

- Provide a clearer case for how this Bachelor program will satisfy admissions criteria for the given master programs at TU, and also in Norway.
- Describe in more detail what participation in TU Schools' Employability program to develop Graduate Skills entails, and how this is organized – particularly during the first two years of study at NUC in Norway.

Assessment

NUC has provided examples of relevant job opportunities in Norway.

NUC seems to believe that since they cover all learning outcomes for NKR level 6, their candidates will satisfy admissions criteria for master programmes in computer science. However, most master programmes in Norway will have specific criteria with respect to the number of credits, kind and/or level in subjects such as computer science and mathematics.

NUC states that the employment program will be followed online for the NUC students in year 1 and year 2. However, with no further details provided, it is not possible to evaluate whether this is feasible or not.

Conclusion

No, the criterion is not fulfilled.

6.2.7 Links to research, academic- and artistic development

§ 7-2 (7) The program must have satisfactory links to research and academic and/or artistic development work, adapted to its level, scope and other characteristics.

NUC must:

- Provide evidence of satisfactory links to research and academic and/or artistic development work, adapted to its level, scope and other characteristics.

Assessment

The expert committee is not able to see that NUC has provided any new information and argumentation to convince the committee to change its original conclusion. The original conclusion therefore is unaltered.

Conclusion

No, the criterion is not fulfilled.

6.2.8 Infrastructure

§ 7-2 (9) The institution must have facilities, library services, administrative and technical services, ICT resources and working conditions for the students, which are adapted to the program.

NUC must:

- Justify that the institution has facilities, library services, administrative and technical services, ICT resources and working conditions for the students, which are adapted to the program, and that can accommodate the potential large number of new students.

Assessment

NUC has only partly addressed the concerns of the committee. In particular, the concerns with respect to library facilities for online students and laptop support are not addressed.

Conclusion

No, the criterion is not fulfilled.

6.3 Academic environment associated with the program (§ 7-3)

6.3.1 The composition, size and competence of the academic environment

§ 7-3 (1) The composition, size and collective competence of the relevant academic environment must be adapted to the program as described by the program description and also adequate for conducting relevant research and academic or artistic development work.

NUC must:

- Justify how the faculty staff's time is distributed between different courses and programs, and evaluate the realism of this plan.
- Justify how the total of FTEs allotted to this program is sufficient.
- Justify how the faculty staff is adequately equipped for conducting relevant research and academic or artistic development work relevant for the study program.
- Start the recruitment process of a new Associate Professor to cover 0,5 FTEs in the program.
- Justify how the faculty staff covers core informatics such as networks and algorithms.

Assessment

NUC agrees that the same allocation of staff time is repeated in several programs and argues that the reason for it is that the many courses are taught in several programs in parallel in such a way that the tutoring staff and not the lecturing staff mainly covers the increased workload of larger student groups.

Although it is nice to have larger classes by adding together students from different programs, they do not address the additional challenges catering to a more diverse student group.

NUC also points out that the lectures are recorded and “can be viewed and reviewed at any time”, which is nice, but should not relieve teaching staff from providing sufficient student support.

NUC also refers to the updated staffing table, CV and publication lists in Appendices 8-10. Appendix 8 claims to be a faculty list for Computer Science, but is identical to the Data Science list. Since the review, one more competent person has been added as a staff member. He has a PhD in Information Systems from the University of Salford UK, and lecturing experience from Dubai.

Although this person clearly will add to the program, the main issues of the reviewers concerns remain. Note in particular that this person is assigned a 60% position the Data Science program (.6 “årsverk” as per Appendix 9), and we can thus maximum assume he would contribute 40% to the CS program.

The table in Appendix 9 does add another position for an Associate Professor, but no information regarding when he/she will join or what area they research will be in other than the person is expected to cover AI, Data Analytics, Visualization and Algorithms, quite a broad area of Computer Science.

In the comments of the table in Appendix 9 the applicant writes: “NUC students studying Data Science ...” clearly copy-pasting their argument from the Data Science application.

The research filed of current staff is still much too narrow for a research-based teaching program leading to a Bachelor’s degree in Computer Science. As pointed out in our comments for the Data Science program, it is even narrow for that program. They promise to hire more faculty, but there is still a major concern that the faculty will be oversubscribed, and not have enough time for relevant research. This concern is heightened since they are cross-listed with the other application submitted to NOKUT and/or are heavily involved in currently running programs.

We therefore see still do not see enough justification of how faculty staff is adequately equipped for conducting relevant research and academic or artistic development work, especially taking into account the fact that several of the staff members are so heavily involved in teaching several courses and programs.

Conclusion

No, this criterion is not fulfilled.

6.3.2 Academic staff and employment

§ 7-3 (3) At least 50 per cent of the academic FTEs allotted to the program must be staff with their primary employment at the institution. Of these, teachers with competence at the level of at least associate professor must be represented among those who teach the core elements of the program.

For the different cycles, the following additional requirements apply:

- a) For first cycle programs, at least 20 per cent of the collective academic environment must have competence at the level of at least associate professor.
- b) For second cycle programs, at least 10 per cent of the collective academic environment must be professors or docents, and an additional 40 per cent with competence at the level of at least associate professor.

NUC must:

- Justify that faculty staff with the right formal competence cover all core elements.
- Provide CVs of all relevant faculty staff members, and quality control the content against the application.

Assessment

NUC states: “NUC is of the opinion that conditional approval can be granted since the only major outstanding issue is the recruitment of one academic staff. The recruitment process has been started, and information will be submitted to Nokut as soon as the employment contract is signed.”

However, they do not quantify what kind of staff are going to be recruited or whether they will adequately cover all of the CS courses that are needed for a solid general CS degree.

In fact, their “faculty update” only lists Data Science staff, and thus have the same issues as the original application previously assessed by the expert committee.

The expert committee is not able to see that NUC has provided enough new relevant information and argumentation to convince the committee to change it’s original conclusion. The original conclusion therefore is unaltered”.

Conclusion

No, the criterion is not fulfilled.

6.3.3 The academic environment’s research and development work

§ 7-3 (4) The academic environment must be actively engaged in research, academic and/or artistic development work.

For the different cycles, the following additional requirements apply:

- a) For first cycle programs, the academic environment must have documented results at a level that is satisfactory in relation to the content and level of the program.
- b) For second cycle programs, the academic environment must have documented results at a high international level of quality, with satisfactory academic breadth.

NUC must:

- Provide adequate indication of how they intend to provide research-based teaching across the core of computer science.

Assessment

The expert committee is not able to see that NUC has provided any new information and argumentation to convince the committee to change it’s original conclusion. The original conclusion therefore is unaltered.

Conclusion

No, the criterion is not fulfilled.

6.3.4 Supervision of professional training

§ 7-3 (5) For programs with supervised professional training, the academic environment and external mentors must have appropriate experience in the field of practice.

NUC must:

- Clearly state if the placement year is optional or not.
- If the placement year is obligatory, NUC must justify that the academic environment and external mentors have appropriate experience in the field of practice.

Assessment

The placement year is now clearly stated as optional.

Conclusion

The criterion is not relevant.

6.4 Supplementary provisions for joint degrees

§ 7-4 (1) It must be clearly defined which parts of the program are the responsibility of each cooperating institution.

§ 7-4 (2)

There must be satisfactory procedures in place for the development of and quality assurance of the program as a whole.

§ 7-4 (3) The constituent parts of the program must make up a whole, as seen in relation to the program's level and learning outcomes

NUC must:

- Justify that this is a joint degree that follows the regulations for joint degrees as given in the Ministerial Regulations concerning Quality Assurance and Quality Development in Higher Education and Tertiary Vocational Education.
- Describe and justify the routines for development and quality assurance for the program as a whole.
- Justify that these routines are satisfactory.
- Justify that both partner institutions are equally involved in the process.
- Describe and justify how the constituent parts of the program make up a whole, as seen in relation to the program's level and learning outcomes.

Assessment

NUC states that students will not go through a second admission procedure before they are admitted to TU, and refers to chapter VI of the consortium agreement. It is still not clear why the students then have to apply online to TU for progression entry to year three (chapter VII, page 13). NUC has not provided any justification/motivation for establishing the joint degree. Instead, they state that their joint ambition is that NUC in the future will be able to offer all three years of the program, and that students may transfer between the institutions according to several different patterns, but that this is too early to describe.

Apart from this, NUC has not provided any new information and argumentation to convince the committee to change its original conclusion, specifically with respect to the routines for development and quality assurance for the program as a whole. The original conclusion therefore is unaltered and argumentation to convince the committee to change its original conclusion. The original conclusion therefore is unaltered.

Conclusion

No, the criterion is not fulfilled.

6.5 Final conclusion

Based on the written application, attached documentation and the commentary from the institution, the expert committee concludes as follows:

The committee does not recommend accreditation of a bachelor degree study in Computer science at Noroff University College (NUC)

7 Decision

We have assessed the criteria in NOKUT's Regulations concerning supervision of the educational quality in higher education (Academic Supervision Regulations), and have reached the following **decision**:

Bachelor Degree in Computer Science (180 ECTS) at Noroff University College (Joint programme with Teesside University) is not accredited.

The following requirements in NOKUT's Regulations concerning supervision of the educational quality in higher education (Academic Supervision Regulations) are not met:

- §7-1 (1) Demands laid down in the Universities and Colleges Act must be satisfied.
- § 7-1 (3) The recruitment of students to the program should be large enough to enable the institution to establish and maintain a satisfactory learning environment and a stable program.
- § 7-2 (2) The program must be described with reference to learning outcomes, cf. National Qualification Framework for Lifelong Learning. The overall learning outcome for each program, defined in knowledge, skills and general competence, shall be described.

- § 7-2 (3) The following conditions shall correspond with and be adapted to the description of the learning outcome so that the learning outcome is achieved: Content and structure of the program.
- § 7-2 (4) The following conditions shall correspond with and be adapted to the description of the learning outcome so that the learning outcome is achieved: Work and teaching methods.
- § 7-2 (5) The following conditions shall correspond with and be adapted to the description of the learning outcome so that the learning outcome is achieved: Examination and other types of evaluation.
- § 7-2 (6) The program must have a clear academic relevance for employment and/or further studies.
- § 7-2 (7) The program must have satisfactory links to research and academic and/or artistic development work, adapted to its level, scope and other characteristics.
- § 7-2 (9) The institution must have facilities, library services, administrative and technical services, ICT resources and working conditions for the students, which are adapted to the program.
- § 7-3 (1) The composition, size and collective competence of the relevant academic environment must be adapted to the program as described by the program description and also adequate for conducting relevant research and academic or artistic development work.
- § 7-3 (3) At least 50 per cent of the academic FTEs allotted to the program must be staff with their primary employment at the institution. Of these, teachers with competence at the level of at least associate professor must be represented among those who teach the core elements of the program.
- § 7-3 (4) The academic environment must be actively engaged in research, academic and/or artistic development work.
- § 7-4 (1) It must be clearly defined which parts of the program are the responsibility of each cooperating institution.
- § 7-4 (2) There must be satisfactory procedures in place for the development of and quality assurance of the program as a whole.
- § 7-4 (3) The constituent parts of the program must make up a whole, as seen in relation to the program's level and learning outcomes

8 Documentation

15/47-1 Noroff University College - søknad om akkreditering av fellesgraden Bachelor in Computer Science (180 studiepoeng)

15/47-19 Tilbakemelding til sakkyndiges vurdering av Noroff University College - søknad om akkreditering av fellesgraden Bachelor in Computer Science.

9 Presentation of the Expert Committee

Associate professor Ragnhild Kobro Runde, University of Oslo (UiO)

Runde is an associate professor at the Department of Informatics (IFI), UiO and head of the Study Lab at the department. The Study Lab particularly caters the freshmen at IFI with measures to create well-being, mastery and enhanced motivation for further studies. They give courses in strategy for learning and specific courses for teacher assistants, as well as continuously working with development of the teaching at the department. Runde is also central in the on-going revision of the program portfolio at the Faculty of Mathematics and Natural Sciences, UiO. Runde is Dr. Scient. in Informatics from UiO. She has worked as a post-doctor, researcher on the SARDAS-project and as a lecturer at IFI. Runde has taken several education-courses at UIO and has substantial experience as course responsible, lecturer and teacher assistant of several informatics courses. She has also been a member on the board of teaching at IFI since 2013.

Associate professor Anne Cathrine Elster, Norwegian University of Science and Technology (NTNU)

Elster is an associate professor at the Department of Computer and Information Science, NTNU. She has a PhD in Electrical Engineering from Cornell University, and is the founder and leader of the Heterogeneous and Parallel Computing Lab (HPC-Lab), IDI. Elster is also Visiting Scientist at the University of Texas in Austin. Elster has extensive experience from teaching, and has completed Pedagogisk utviklingsprogram (PEDUP). She (co-)supervises several PhD-and Master -students. Elster was previously employed at Schlumberger Austin, before she returned to academia in 1997, and has been a member of the MPI standards committees, and the Norwegian Research Counsel's HPC committee in 2003-2004. She was one of four WG leaders in EU COST Action IC0805: Open European Network for High Performance Computing on Complex Environments. Elster organized and hosted PARA 2008 in May 2008, and has organized a series of mini-symposia and international panels. She is annually part of several program committees within her field of expertise.