

AKKREDITERINGS- RAPPORT

Bachelor in Applied Software Development

Noroff University College AS

2025



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Grad/studiepoeng	Bachelor/180 studiepoeng
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Introduction

NOKUT ensures the quality of Norwegian higher education through, among other things, supervision of institutions' systematic quality work, accreditation of new study programs, and supervision of established programs. Universities and university colleges have varying authority to establish study programs. If institutions wish to establish a program beyond their authority, they must apply to NOKUT for accreditation of the program.

The expert committee appointed by NOKUT has assessed the application from Noroff University College AS for accreditation of Bachelor in Advanced Software Development. The committee has compiled its assessments in this report.

About this report

NOKUT's method for accrediting study programs, as described in Appendix 2 of this report, allows the committee to revise its assessments and conclusions during the evaluation process if new information becomes available. That is the case in this report. The committee's additional assessments are presented under the relevant provisions.

Hege Brodahl
Head of Higher Education

All NOKUT's assessments are public, and this and similar reports will be electronically available on our website www.nokut.no.

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1 Information regarding the applicant institution

Noroff University College (NUC) is a private institution established in 1987. It offers a variety of bachelor's degree programmes with a strong emphasis on digital and technological disciplines. Noroff University College operates campuses in Oslo, Bergen, Kristiansand, and Stavanger, in addition to providing online programmes.

As Noroff University College is not an accredited higher education institution, it is required to apply to NOKUT for the accreditation of each individual study programme. The institution's quality assurance system was approved by NOKUT in 2024.

2 Decision

Vilkårene i forskrift til universitets- og høyskoleloven (universitets- og høyskoleforskriften) er ikke oppfylt. Søknaden om akkreditering av Bachelor in Applied Software Development (180 studiepoeng) ved Noroff University College AS avslås.

3 Expert assessment

3.1 Summary

Advanced Software Development is a study programme that emphasises foundational IT knowledge, software design, and applied software development. The study programme aligns well with identified needs of the Norwegian industry and society for candidates within software development and engineering.

The content and organisation of the study programme are similar to most other bachelor programmes in Norway within computer science (*in Norwegian: informatikk*) and software development. It covers central computer science topics including programming, operating systems, databases, algorithms, data structures, and software development methodology. As such the committee finds the use of the term “Advanced” in the programme title misleading, as the level of the courses is similar to other bachelor programmes in computer science at the national level.

The content and structure, including progression, learning outcomes, teaching and assessment methods are clearly and comprehensively described. The committee has some recommendations for central topics related to software development that appear to have been omitted from the study programme.

The study programme being within computer science violates in its current form national regulations for admission requirements into computer science programmes at the bachelor level as it requires only higher education entrance qualification for admission. The committee has also identified weaknesses in how mathematical topics are covered in the study programme.

The committee has identified weaknesses in the competence of the academic staff in terms of covering the field of computer science in general and software development in particular. This includes the research activities, publications, and networks of the academic staff which the committee finds are not covering the scientific fields of software development and software engineering in a satisfactory manner.

The committee has identified several requirements that must be addressed prior to accreditation.

Assessment after response from the institution to the initial report

Based on supplementary information and the applicant institution's comments, the requirements are now considered fulfilled for:

- Learning outcome and title of programme
- The programme’s workload and linkage between courses and research topics
- The external participation of the academic environment

However, the expert committee finds the supplementary information and the applicant institution's comments unsatisfactory for the remaining requests from the committee, and the following actions are required:

- Add mathematics R1 or S1+S2 as part of the admission requirements
- Document research activities and associated publications of the academic staff having a direct linkage to research fields of software development and software engineering.
- Increase the number of academic staff with at least one full-time academic staff member with a PhD degree and an active research track record within software engineering/development.
- Demonstrate a solid track-record of research activities and publications within international software development and software engineering research venues.

Based on the shortcomings to the requirements mentioned above, the committee does not recommend accreditation of the Bachelor in Applied Software Development (BAPSD) at Noroff University College.

3.2 Basic prerequisites for accreditation

3.2.1 Demands expressed in the Universities and College Act

Regulations on Quality Assurance in Higher Education

Section 3-1 (4) It is a condition for accreditation being granted that the requirements of the Universities and University Colleges Act are met. Regulations adopted under the authority of Section 3-2 of the Universities and University Colleges Act shall form the basis for the accreditation.

Academic Supervision Regulations

Section 2-1 (1) The requirements of the Act relating to Universities and University Colleges and its corresponding regulations must be met.

New regulation (Forskrift til universitets- og høyskoleloven):

§ 1-10 Generelle vilkår for akkreditering

Et vilkår for akkreditering av studietilbud er at kravene i universitets- og høyskoleloven med forskrifter er oppfylt.

Assessment

The requirements for governance arrangements, regulations, appeals committee, learning environment committee, and quality assurance system have not been assessed at this time as the institution is an accredited college. In this section, only relevant requirements in the Regulations on Admission to Higher Education, Diplomas, and Diploma Supplement have been assessed.

The Diploma and Diploma Supplement are produced using the national template provided by the Norwegian Association of Higher Education Institutions (Universitets- og høyskolerådet). The committee has no comments regarding this.

Admission

Bachelor in Advanced Software Development (BADSD) is a study programme in the first cycle (level six) of the national qualification framework and is regulated by the Regulations on Admission to Higher Education. The admission requirements are:

- Higher Education Entrance Qualification, or
- Completed a Higher Professional Degree, and
- Candidates must be able to document proficiency in the English language.

For admission based on prior learning and work experience:

- Admission based on prior experience requires a written application for evaluation.
- Applicable candidates must be at least 25 years of age in the year of admission.

For candidates with foreign education, the requirements for Higher Education Entrance Qualification are:

- The country must be recognized, specified in the GSU-list.
- Candidates must be able to document proficiency in the English language.

The committee assess BADSD as an “informatikkutdanning” (computer science education). Software development is and has always been at the core of informatikkutdanning, and the argument NUC makes about similarities to Østfold University College’s Bachelor i informasjonssystemer and NTNU’s Bachelor i webutvikling are not valid since those study programmes are not informatikkutdanning.

The regulations concerning admission to higher education (forskrift om opptak til høyere utdanning) states that computer science education require mathematics R1 or S1+S2. BADSD does not require R1 or S1+S2 as part of the admission and hence does not satisfy this regulation.

The application states that mathematical concepts and background will be introduced when required in the courses. The latter is not described in any detail in the application and there is no detailed specification of what mathematical concepts are needed in which courses. Other similar bachelor programmes in information technology/software development contain mathematics that builds upon R1 (and R2 for engineering education). Hence, a more detailed account of what mathematical foundation is needed for the various courses in the programme would be appropriate to demonstrate the feasibility of the study programme from a mathematical perspective. It may be that for instance very limited continuous mathematics would be needed for the proposed courses.

Language

According to § 2-3 of the Act relating to Universities and University Colleges (universitets- og høyskoleloven), the language of instruction at Norwegian higher education institutions shall be Norwegian or Sami. Exceptions may be granted only if they are academically justified.

In its application, NUC refers to English as the “work and delivery language” but fails to provide any academic rationale for this choice. The absence of a substantiated justification means that NUC does not meet the legal requirements set forth in § 2-3 of the Act.

The institution is required to:

- Add mathematics R1 or S1+S2 as part of the admission requirements.
- Provide an academic rationale for delivering the programme exclusively in English.

The institution is advised to:

- Provide a more detailed account of what mathematical foundation is needed for the various courses in the programme.

Assessment after response from the institution to the initial report

NUC has provided an academic rationale for delivering the programme exclusively in English, and the committee finds § 2-3 in Act relating to universities and university colleges to be fulfilled.

NUC has provided a detailed justification of their entry requirements, but the committee still considers the Bachelor in Applied Software Development (BAPSD) to be “informatikkutdanning” (computer science education).

The Ministry of education and research states on page 9 of “Rundskriv F-06-20 Forskrift om opptak til høgare utdanning”¹ that an education is to be considered a computer science (informatikk) education if “Minst halvparten av studiepoenga er i informatikk og nødvendige støttefag i realfag og teknologi” (“At least half of the total ECTS is computer science and supporting courses in STEM (Science, Technology, Engineering, Mathematics)”).

The two courses

- Mathematics 1 (10 ECTS)
- Mathematics 2 (10 ECTS)

are clearly mathematics (and hence STEM) courses, and they are explicitly described in the application as supporting courses.

According to the internationally recognised curriculum guidelines for computer science², the BAPSD mandatory courses listed below are all within the body of knowledge that characterises computer science study programmes. For each course, the identified and corresponding primary computer science knowledge area from the curriculum guidelines area is specified.

- Programming 1, 10 ECTS (Software Development Fundamentals)
- Programming 2, 10 ECTS (Software Development Fundamentals)
- Algorithms and Data Structures, 10 ECTS (Algorithmic Foundations)
- Operating Systems, 10 ECTS (Operating Systems)
- Database Design, 10 ECTS (Data Management)
- Web Development 1, 10 ECTS (Specialized Platform Development)
- Web Development 2, 10 ECTS (Specialized Platform Development)
- Design Methodologies, 10 ECTS (Software Engineering)
- Software Development Project, 10 ECTS (Software Engineering)
- Software Architecture, 10 ECTS (Software Engineering)
- Robust Coding, 10 ECTS (Security)
- Advanced Application Development, 10 ECTS (Specialized Platform Development)

¹ https://www.regjeringen.no/contentassets/116d8415e7c94f0a8d7539e34e6f6890/rundskriv-f-06-20-forskrift-om-opptak-til-hogare-utdanning_oppdatert-versjon.pdf

² <https://ieeecs-media.computer.org/media/education/reports/CS2023.pdf>

- Capstone Project, 20 ECTS (Software Engineering)

This implies that a total of 140 out of 180 ECTS coincides with curriculum guidelines for computer science. This is supplemented by supporting mathematics courses of 20 ECTS. Based upon this, the committee concludes that more than half of the ECTS credits is in computer science or STEM (Science, Technology, Engineering, Mathematics). Hence, the enrolment criteria must include 'R1 or S1+S2' according to «Rundskriv F-06-20 Forskrift om opptak til høgare utdanning».

Conclusion

The requirement is not fulfilled.

The institution is required to:

- Add mathematics R1 or S1+S2 as part of the admission requirements.

3.2.2 Information about the programme

Academic Supervision Regulations

Section 2-1 (2) Information provided about the programme must be correct and show the programme's content, structure and progression, as well as opportunities for student exchanges.

New regulation (Forskrift til universitets- og høyskoleloven):

§ 1-11 Krav til studietilbudet

k. Informasjonen om studietilbudet skal være korrekt, vise studiets innhold, oppbygging og progresjon, herunder muligheter for studentutveksling.

Assessment

The programme's content and structure, including its progression, learning outcomes, teaching methods, and assessment methods, are all clearly and comprehensively described. Furthermore, each course within the programme is accompanied by a comprehensive course description.

Although opportunities for student exchange are mentioned in the study plan, the information provided is not particularly specific. The programme description states: "Full details of international study opportunities and the application process are available to all students within the LMS." As international students exchange agreements are multi-year agreements, NUC should provide more specific information about student exchange opportunities in the programme description.

Conclusion

The requirement is fulfilled.

The institution is advised to:

- Clarify student exchange with greater precision.

3.3 Demands to the educational provision

3.3.1 Learning outcome and title of programme

Academic Supervision Regulations

Section 2-2 (1) The learning outcomes for the programme must be in accordance with the National Qualifications Framework for Lifelong Learning, and the programme must have an appropriate title.

New regulation (Forskrift til universitets- og høyskoleloven):

§ 1-11 Krav til studietilbud

c. Læringsutbyttet skal være i samsvar med Nasjonalt kvalifikasjonsrammeverk for livslang læring for det aktuelle nivået.

a. (Studietilbudet skal være definert og avgrenset, ha tilstrekkelig faglig bredde og) et dekkende navn.

Assessment

The overall learning outcomes of the programme

The learning outcomes are in accordance with the national qualification framework (NQF), and have been formulated specifically targeting software development, software technology, and software development tools.

The learning outcomes are formulated using the same verbs as those used at Level 6 in the NQF. However, it is not easy to see how they relate to the requirements in the NQF. For example, making it clearer which outcomes reflect knowledge, skills, or general competence would improve transparency. Additionally, Skill 7 and General Competence 3 both address communication and articulation, and appear to overlap.

Name of the programme

The word “advanced” in Bachelor in Advanced Software Development (BADSD) is inappropriate. The level of a study programme is provided based on its level in the qualification framework, which in this case is a bachelor. The word “advanced” also indicates that this is a continuation of something that is not “advanced”, hence it is a misleading name. “Advanced” is commonly used in course names in the second or third year to indicate that an “advanced” course is built on the concepts introduced in a “basic” course. This is also true for BADSD with the course “Advanced Application Development” in the fifth semester. In other words, most courses in BADSD are basic or foundational and not “advanced”. BADSD has to a large extent the same content as many other similar bachelor programmes in Norway (e.g. UiO: Bachelor i informatikk - programmering og systemarkitektur, NTNU: Bachelor i programmering, Høyskolen Kristiania: Bachelor i

informasjonsteknologi - programmering), and none of them use the term “advanced” (“avansert”) in their title.

The institution is required to:

- Remove the word “advanced” from the name study programme name.

The institution is advised to:

- Differentiate between these learning outcomes: Skill number 7 and General competence number 3.

Assessment after response from the institution to the initial report

NUC has changed the name of the study programme from Bachelor in Advanced Software Development (BADSD) to Bachelor in Applied Software Development (BAPSD). The committee assess this requirement as fulfilled.

NUC has updated the programme learning outcome skill number 7 to differentiate it from general competence number 3.

Conclusion

The requirement is fulfilled.

3.3.2 The programme’s academic update and professional relevance

Academic Supervision Regulations

Section 2-2 (2) The programme must be academically up-to-date and have clear academic relevance for further studies and/or employment.

New regulation (Forskrift til universitets- og høyskoleloven):

§ 1-11 Krav til studietilbud

a. Studietilbudet skal være faglig oppdatert og ha tydelig relevans for videre studier eller arbeidsliv.

Assessment

Academically up-to-date

BADSD emphasizes practical experience and industry collaboration, and the course portfolio is to a large extent academically up-to-date, with some exceptions:

- Based on the course descriptions, BADSD relies on programming languages such as Python, Java, and C#. It is not detailed why so many different programming languages are considered, or why those specific languages are chosen when other languages are likely required in some of the courses in the second and third years, e.g. the C in both Operating systems and in Robust coding.

- BADSD seems to lack clear coverage of internet network technology which is a foundational topic of importance in many of the proposed courses. Computer networks and the Internet are only covered as one of many topics in the five-ECTS course IT Fundamentals in the first semester.
- Version control with Git is a core technology used in most parts of software development today, and most similar study programmes introduce this topic in the first or second semester. This topic is not mentioned in BADSD until the fourth semester in the course Software Development Project.

Relevance for further studies and/or employment.

BADSD covers expected topics – programming, web development, operating systems, software development, databases, and design methodology on software development and associated tools and technologies aimed at achieving competence as a full-stack developer. This is clearly relevant competence for the industry as well as for further master's studies within software development. Graduates are expected to fill job roles such as

- Software Developer
- Web Developer
- Full-Stack Developer
- Mobile App Developer
- IT Project Manager

The application states that students from BADSD can continue on many master programmes, exemplified by master programmes at NTNU, OsloMet, Leeds Beckett University and IT University of Copenhagen.

The committee considers the descriptions of relevant job roles and master programmes for further studies adequate.

Conclusion

The requirement is fulfilled.

The institution is advised to:

- Consider the interdependencies between courses on how different programming languages should be used throughout the study programme.
- Consider introducing a course on computer networks and internet technologies.
- Consider introducing version control with Git in the first or second semester.

3.3.3 The programme's workload**Academic Supervision Regulations**

Section 2-2 (3) The total workload of the programme must be between 1,500 and 1,800 hours per year for full-time students.

New regulation (Forskrift til universitets- og høyskoleloven):

§ 1-11 Krav til studietilbud

f. Studietilbudets samlede arbeidsomfang skal være på 1500–1800 timer per år for heltidsstudier

Assessment

The application demonstrates that the workload for the programme is 1500 hours per year, with 35% (526 hours) allocated for the first year, 30% (444 hours) for the second year, and around 25% (374 hours) for the third year devoted to organised learning activities or "guided education." The remaining time is reserved for self-study and preparation for, as well as the execution of, assessment activities. The expert committee has determined that the total workload and the percentage of organized learning activities are acceptable.

The programme description states: "The part-time equivalent is based on a 20-hour per week study schedule, comprising twelve (12) semesters delivered over six (6) academic years (each of a 10-months duration), with each year providing 30 ECTS of educational material and qualification. This results in a 15 ECTS workload per semester and a total of 180 ECTS for the full bachelor's degree, which equates to 1,500 –1,800 hours of work." Only the first semester has courses that allow for a split into two 15 ECTS parts, since the following semesters have either 10+10+10 ECTS or 10+20 ECTS. This needs to be clarified to give better information to part-time students.

The institution is required to:

- Clarify the information about workload for part-time students.

Assessment after response from the institution to the initial report

NUC has provided an updated workload schedule making it explicit that the first two semesters each are 15 ECTS while it varies between 10 and 20 for the 2. and 3. year.

Conclusion

The requirement is fulfilled.

3.3.4 The programme's content, structure and infrastructureAcademic Supervision Regulations

Section 2-2 (4) The programme's content, structure and infrastructure must be adapted to the programme's learning outcomes.

New regulation (Forskrift til universitets- og høyskoleloven):

§ 1-11 Krav til studietilbud

d.Studietilbudets innhold, oppbygging og progresjon skal være tilpasset læringsutbyttet.

h. Studietilbudets organisering og infrastruktur skal være tilpasset læringsutbyttet og stå i forhold til antallet studenter.

Assessment

The content and structure of the study program

The programme consists of 17 mandatory courses and one elective course. The elective course is chosen by the students from a set of five courses. The courses are placed in semesters following a well-known pattern of progression in bachelor programmes in this field:

- Semester 1: IT Fundamentals, Mathematics 1, Programming 1, Academic Skills
- Semester 2: Design Methodologies, Mathematics 2, Programming 2
- Semester 3: Web Development 1, Operating Systems, Database Design
- Semester 4: Web Development 2, Software Development Project, Algorithms and Data Structures
- Semester 5: Software Architecture, Robust Coding, Advanced Application Development
- Semester 6: Elective Course(s), Capstone Project

The structure of the programme leaves only 10 ECTS for elective course work. Hence the level of specialisation that the programme makes possible is limited.

Progression

The learning outcome (knowledge, skills and general competence) of the compulsory courses all contribute to the programme learning outcomes. The first year provides foundational courses, the second consists of intermediate-level and project-oriented courses, while the third year has advanced topics, an elective and the capstone project.

Some of the courses do not specify prerequisite knowledge from courses that they naturally should build upon. The institution is advised to make the following updates to the course description:

- The third semester course Web Development 1 should build upon Programming 1 since it involves client-side programming.
- The third semester course Database Design should build upon Programming 1 since modelling is easier when you have a programming background.
- The fourth semester course Web Development 2 only mentions Web Development 1 as prerequisite knowledge, but the learning outcomes describe server-side programming and database integration, hence Programming 2 and Database Design should also be prerequisites.
- The fifth semester course Robust Coding should build upon Operating Systems since understanding secure software requires an understanding of operating systems.

The infrastructure of the study programme

NUC states: "Noroff University College operates and offers degree programmes for studying Online, decentralized delivery on Campus Oslo and Bergen referred to as OnlinePLUS, and

location-based experience on Campus Kristiansand. Noroff University College (NUC) and Noroff Fagskole (NF), henceforth referred to as Noroff, share campuses but have clearly separated classrooms and special rooms.”

Further details are provided in attachment 09-Infrastructure. NUC’s virtual learning environment consists of:

- The learning management system Moodle
- Campus audio-visual (streaming/recording) system Zoom
- Virtual laboratory with oVirt and virtual machines
- Chat systems Teams and Zoom

The committee’s assessment is that this is an adequate general infrastructure for providing BADSD, but NUC should provide details on access to software development tools and infrastructure (e.g., version control and deployment of web-applications). Too little detail is provided on this aspect.

Conclusion

The requirement is fulfilled.

The institution is advised to:

- Provide details in the study programme description on access to software development tools and infrastructure.
- Update the prerequisites in some of the course descriptions as described in the assessment.

Assessment after response from the institution to the initial report

NUC has updated the prerequisites in the course descriptions mentioned in the initial report, and the committee have withdrawn the second piece of advice.

The institution is advised to:

- Provide details in the study programme description on access to software development tools and infrastructure.

3.3.5 Teaching, learning and assessment methods

Academic Supervision Regulations

Section 2-2 (5) The teaching, learning and assessment methods must be adapted to the programme’s learning outcomes. The programme must facilitate students taking an active role in the learning process.

New regulation (Forskrift til universitets- og høyskoleloven):

§ 1-11 Krav til studietilbud

e. Undervisnings-, lærings- og vurderingsformer skal være tilpasset læringsutbyttet og utformet slik at de fremmer at studentene tar en aktiv rolle i å forme læringsprosessen.

Assessment

BADSD is based on teaching, learning and assessment methods described as:

- **Teacher-led activity:** “Teacher-led activities are scheduled activities where the students’ build knowledge within a course, for example through lectures and presentations.”
- **Teacher-supported work:** “Teacher-supported work sessions ensure that all students are given equal opportunities in achieving the CLOs, in addition they are provided equal support in order to actively engage in all tasks and course work activities in an appropriate manner.”
- **Self-study:** “Self-study aims for students to engage in their learning process. Learning is an active process and the students’ own efforts are essential for them to build scaffolds and ultimately being able to support their peers.”
- **Assessment methods:** “NUC has a range of assessment methods available throughout the degree, with assessments being used to support the students’ learning (formative assessments) and verification that the course learning outcomes have been achieved (summative assessments).”

NUC adequately documents the teaching, learning and assessment forms used in BADSD, but there is little variety in the teaching, learning, and assessment forms throughout the study programme. NUC should describe in more detail how the teaching, learning and assessment methods are implemented in the different courses, specifically where these differ in foundational courses like Operating System versus practical courses like Software Development Project. The distribution of hours on different methods is documented in the application, but there should be more information on the actual implementation beyond just the difference in numbers.

The forms of work are described generically, and almost all courses seem to rely on the same forms of work and assessment. This suggests a low level of adaptation to software development themes and little variety. Given the broad range of software development topics covered, it can be questioned whether the lack of variety in teaching and assessment is suitable. For instance, the difference between an introductory programming course and a design methodology course targeting, e.g., Scrum and Agile development methods, where group work is natural and where collaboration situations would need to be simulated.

The application states about online exams: “Students have a fixed time to complete the exam, thus reducing the possibility of students being able to locate the answers in notes, textbooks or online. Each student is allowed only one attempt at the exam. The exam may comprise of a fixed set of questions or may make use of a different sub-set of questions for each student taking the exam. When the latter option is used, each student is presented with a different set of questions selected randomly from the available bank of questions,

resulting in an exam unique to each student. The questions aim specifically to address individual learning outcomes of the course.” NUC should be aware that this still does not prevent online students from having someone other than themselves take the exam, and they should include exams in controlled environments (e.g. oral exams) in most courses for online students to ensure integrity in the grading process.

The teaching and learning activities all facilitate the active role of the students in the learning process. The active role of students in the learning process is adequately described and discussed.

Conclusion

The requirement is fulfilled.

The institution is advised to:

- Differentiate more in time used for work and assessment based on the nature of each course.
- Elaborate in the course descriptions how the teaching, learning and assessment methods are implemented in different courses.
- Include exams in controlled environments (e.g. oral exams) in most courses for online students.

3.3.6 Links to research and/or artistic development work and academic development work

Academic Supervision Regulations

Section 2-2 (6) The programme must have relevant links to research and academic development work and/or artistic research.

New regulation (Forskrift til universitets- og høyskoleloven):

§ 1-11 Krav til studietilbud

g. Studietilbudet skal ha relevant kobling til forskning eller kunstnerisk utviklingsarbeid og faglig utviklingsarbeid.

Assessment

Software development is as a field of study within informatics/computer science/information technology focused on the foundations, tools, technology, development processes, and methodology for the engineering of software and software systems solutions (IEEE Computer Society: *Software Engineering Body of Knowledge 2024*,³ Association of Computing Machinery: *Computing Curricula 2020*).⁴

³ <https://www.computer.org/education/bodies-of-knowledge/software-engineering>

⁴ <https://www.acm.org/education/curricula-recommendations>

The application describes generally that teaching at NUC is research-based by exposing students to current and emerging topics from conferences, journals, and ongoing research projects and associated networks. The courses on Academic Skills, Design Methodologies, Software Development Project, and the Capstone Project are explicitly mentioned as courses where students are to develop their problem-solving skills for open-ended problems. In addition, the general teaching approaches of research-based tutoring, research-based teaching, research-led teaching, and research-oriented teaching adopted by NUC are highlighted as being central to exposing the students to scientific work practices and state-of-the-art research.

The Academic Skills 1 Reading List is comprised of general textbooks and guides on science and studying skills; the Design Methodologies Reading List is comprised textbooks on programming and Scrum; The Software Development Project Reading List is comprised of textbooks on programming and software engineering, while the Capstone Project Reading List contains two books on project management. The reading lists of the other courses within the study programme are also comprised of textbooks and technical tutorials. This is not consistent with the statement in the application that "Teaching is research-based in order to provide students with current and emerging concepts and ideas in each of the courses. This is drawn from a variety of sources including: relevant conferences and journals, ...". Hence, the linkage between the courses in the study programme and research literature is not considered satisfactory.

The application states that NUC is involved in international research initiatives, and research related activities in collaboration with international institutions, but does not give a detailed account of what these research activities are, nor specifically how they thematically link to the core courses in software development within the study programme. It is also stated that the academic staff consists of research-active personnel within the core elements of the study programme without linking the relevance of the publications from the academic staff to the core elements. In particular, the vast majority of the papers in the provided publication lists from the academic staff are to papers within artificial intelligence, machine learning, cyber security, communication technology, and not within the research area of software development (or software engineering) which are the core field of the study programme. This implies (as further discussed in 3.4.5 and 3.4.6) that the linkage between the research and network activities of the academic staff and the area of software development and software engineering is not considered satisfactory.

The institution is required to:

- Document that the students are exposed to research literature throughout the study programme.
- Document research activities and associated publications of the academic staff having a direct linkage to research fields of software development and software engineering.

Assessment after response from the institution to the initial report

NUC has provided a generic listing of some research topic in selected courses that the students will be exposed to, and link these to the overall programme learning outcomes. While it does not list specific research literature that the students will be exposed to, the committee finds that this sufficiently documents research exposure.

NUC has listed publications for two selected staff members to document research linkage to software development and engineering. The publications are on educational research and not on software engineering and development. No detailed account of any ongoing research activities that students will be exposed are not given. The committee therefore maintains its assessment that the linkage to research and development work within software development is still too weak.

Conclusion

The requirement is not fulfilled.

The institution is required to:

- Document research activities and associated publications of the academic staff having a direct linkage to research fields of software development and software engineering.

3.3.7 The programme's internationalisation arrangements

Academic Supervision Regulations

Section 2-2 (7) The programme must have internationalisation arrangements adapted to the programme's level, scope and other characteristics.

New regulation (Forskrift til universitets- og høyskoleloven):

§ 1-11 Krav til studietilbud

i. Studietilbudet skal ha ordninger for internasjonalisering som er tilpasset studietilbudets nivå, omfang og egenart. Studietilbud som fører fram til en grad, skal i tillegg ha faglig relevante ordninger for internasjonal studentutveksling.

Assessment

NUC's bachelor's degree programme prioritizes the use of English and international resources in evaluating the programme. Essential reading materials, including books, publications, and other resources, are in English, and the programme's academic team has developed most of the learning materials and content in English.

To enhance the programme's international outlook, NUC collaborates with other institutions by arranging guest speakers from academic and commercial institutions and connecting with international researchers who provide guidance on advanced topics.

NUC has a team of international staff from various countries to provide a global perspective to the programme. These measures collectively foster a diverse and internationalised learning environment for students.

The committee assesses this requirement as fulfilled based on NUC's international staff, resources and other materials along with its international connections.

Conclusion

The requirement is fulfilled.

3.3.8 The programme's arrangements for international student exchange

Academic Supervision Regulations

Section 2-2 (8) Programmes that lead to a degree must have arrangements for international student exchanges. The content of the exchange programme must be academically relevant.

New regulation (Forskrift til universitets- og høyskoleloven):

§ 1-11 Krav til studietilbud

i. Studietilbudet skal ha ordninger for internasjonalisering som er tilpasset studietilbudets nivå, omfang og egenart. Studietilbud som fører fram til en grad, skal i tillegg ha faglig relevante ordninger for internasjonal studentutveksling.

Assessment

Student mobility is a priority for NUC, and the institution has developed an exchange programme that allows students to search for relevant courses globally and apply to have the exchange incorporated into their studies.

NUC is part of the Erasmus+ programme and has entered into exchange agreements with universities, such as Deakin University, Australia, and Teesside University, UK and more, to guarantee educational opportunities, with a diverse range of options when students seek to study abroad. The partner universities have relevant software engineering courses.

NUC's application process for student exchange is tailored to ensure that the exchange is academically relevant and contributes to the student's education at NUC.

NUC's policies around student exchange to universities like Teesside and Deakin, with academically relevant courses, in addition to participation in Erasmus+, lead the committee to conclude that this requirement is fulfilled.

Conclusion

The requirement is fulfilled.

3.3.9 Supervised professional training

Academic Supervision Regulations

Section 2-2 (9) Programmes that include supervised professional training must have formal agreements between the institution and the host for the supervised professional training.

New regulation (Forskrift til universitets- og høyskoleloven):

§ 1-11 Krav til studietilbud

I. For studietilbud med praksis skal det foreligge praksisavtale mellom institusjon og praksissted.

Assessment

Not applicable to this application.

3.4 Academic environment

3.4.1 The academic environment's composition, size and competence

Academic Supervision Regulations

Section 2-3 (1) The academic environment for each programme must be of a size proportionate to the number of students and the programme's characteristics, be stable over time in terms of competence and have a composition that covers the programme's topics and subjects.

New regulation (Forskrift til universitets- og høyskoleloven):

§ 1-12. Generelle krav til fagmiljø

Første ledd: [...] og ha en sammensetning som dekker fag, emner og veiledningen som inngår i studietilbudet.

Assessment

NUC describes the study programme as being supporting by an academic team comprised of 8 staff members contributing more than 0,1 full-time-equivalent to the study programme. This is supplemented by an additional 7 persons contributing less than 0,1 full-time-equivalent. The study programme is designed to have a 1:24 FTE/student ratio (6,3 FTE to 146 enrolled students) which in the experience of NUC from similar study programmes is a viable resource ratio. Robustness in delivering the study programme is addressed by associating an experienced lecturer as course leader to each course, accompanied by a second lecturer.

The committee finds it plausible that the total size of the academic staff is sufficient to sustain the envisioned number of enrolled students. However, the committee finds it problematic that more than half of the academic staff is involved in teaching between 10 and 14 of the courses in the study programme. In particular, this will have a negative impact on the continuity when delivering the courses and thereby negatively impact the learning outcome of students. Furthermore, this fragmentation will most likely negatively affect the ability of the academic staff to undertake research.

The information provided in the attached CV shows that fewer than half of the academic staff holds master's degrees specifically within computer science while some holds master's degrees in the adjacent fields of information technology, communication technology, and cyber security. For the professor and associate professor positions, most staff members hold PhD degrees in specialised fields outside the field of software development and software engineering. Furthermore, as discussed in 3.4.5, the vast majority of research activities and publications of the academic staff lies outside the core field of software development and software engineering. The committee therefore concludes that the competence and composition of the academic staff is not sufficient to sustain the proposed study programme in a satisfactory manner.

Only three of the staff members have a track record of employment at NUC of more than 2 years. The expert committee consider this to be borderline when it comes to ensuring the stability of the academic environment over time.

The institution must:

- Increase the number of academic staff with at least at least one full-time academic staff member with a PhD degree and an active research track record within software engineering/development.

The institution is advised to:

- Develop and take measures to ensure the continued employment of the academic staff members who have a relatively short employment history at NUC.

Assessment after response from the institution to the initial report

NUC has not increased the academic staff by at least one full-time academic staff member with a PhD degree and active research track record within software engineering/development. The response from the institution highlights the research activities of two staff members having a publication track record with focus on educational research in the domain of software engineering/development. The committee therefore maintains its position that the vast majority of research activities and publications of the academic staff lies outside the core field of software development and software engineering.

Conclusion

The requirement is not fulfilled.

The institution must:

- Increase the number of academic staff with at least one full-time academic staff member with a PhD degree and an active research track record within software engineering/development.

3.4.2 The academic environment's educational competence

Academic Supervision Regulations

Section 2-3 (2) The faculty / teaching staff must have relevant educational competence.

New regulation (Forskrift til universitets- og høyskoleloven):

§ 1-12 Generelle krav til fagmiljø

Tredje ledd: Fagmiljøet skal ha relevant utdanningsfaglig kompetanse i universitets- og høyskolepedagogikk og -didaktikk, samt kompetanse til å utnytte digital teknologi for å

fremme læring. Institusjonen skal legge til rette for oppdatering og utvikling av fagmiljøets kompetanse.

Assessment

NUC has several initiatives in place to ensure and develop the pedagogical competence of its staff.

During the recruitment process, NUC assesses the pedagogical competence of teaching staff, requiring informal and/or formal pedagogical experience. New teaching staff receive individual training and guidance from experienced colleagues, and they are mentored during their first weeks of teaching.

NUC has developed and implemented a non-credit bearing course, NUC-PED to cover guidelines for pedagogical competence. This course is equivalent to 200 hours.

All teaching staff who do not have formalised pedagogical competence are prioritised to take the NUC-PED training within their first two years of employment.

Eight staff members have submitted their academic CVs, and five of them have pedagogical training. The remaining three have been hired within the last two years, giving them time to gain the relevant NUC-PED course in accordance with NUC policies mentioned in the application.

Conclusion

The requirement is fulfilled.

3.4.3 Academic leadership

Academic Supervision Regulations

Section 2-3 (3) The programme must have a clear academic leadership with defined responsibilities for quality assurance and the development of the study programme.

New regulation (Forskrift til universitets- og høyskoleloven):

§ 1-11 Krav til studietilbudet

j. Studietilbudet skal ha en tydelig faglig ledelse med et definert ansvar for kvalitetssikring og -utvikling av studiet.

Assessment

The information about academic leadership describes the roles and responsibilities concerning academic management, quality assurance and development of the study programme.

The NUC board acts as the supreme body of the institution. It is responsible for strategy, study portfolio, quality of education and the quality system. The board assures that major provisions are adopted, processes current issues and monitors information on status.

Rector has been delegated the assurance of quality of education provided by NUC. The rector has overall responsibility for assuring and developing the quality of education at NUC and is responsible for maintaining an appropriate quality system. The rector is also responsible for the academic delivery, the management of academic staff, research, and the continuous professional development of staff.

For each study programme, there is an assigned head, the study programme leader. This role is explicitly defined as having the academic and pedagogical responsibilities for both campus and online operations. The study programme leader leads the academic team, organises and revises the study plan. They are pedagogically responsible for the programme and ensure that teaching methods and learning activities are in line with best practice.

NUC has a quality assurance system that supports this leadership structure which includes mechanisms for evaluating courses and programmes, the quality of learning activities and the attainment of learning outcomes.

These approaches in combination with the clear responsibilities assigned to the board, rector and study programme leaders, demonstrate a defined structure for academic leadership.

Conclusion

The requirement is fulfilled.

3.4.4 Staff with primary employment

Academic Supervision Regulations

Section 2-3 (4) At least 50 per cent of the academic full-time equivalents affiliated to the programme must be staff with their primary employment at the institution. Of these, academic staff with at least associate professor qualifications must be represented among those who teach the core elements of the programme. In addition, the following requirements apply to the academic environment's level of competence:

- a) For first-cycle programmes, at least 20 per cent of the members of the academic environment must have at least associate professor qualifications.
- b) For second-cycle programmes, at least 50 per cent of the members of the academic environment must have at least associate professor qualifications. Within this 50 per cent, at least 10 per cent must have professor or docent qualifications.
- c) For third-cycle programmes, the academic environment must consist of academic staff with at least associate professor qualifications. At least 50 per cent must have professor qualifications.

New regulation (Forskrift til universitets- og høyskoleloven):

§ 1-12. Generelle krav til fagmiljø

Andre ledd: Minst 50 prosent av årsverkene tilknyttet studietilbudet skal utføres av ansatte i hovedstilling ved institusjonen. I de sentrale delene av studietilbudene skal det være ansatte i hovedstilling med førstestillingskompetanse. Førstestillingskompetanse

innehas av ansatte i førstestilling og andre med doktorgrad. Førstestillinger er stillingene førstelektor, førsteamanuensis, dosent og professor.

Assessment

Number of full-time equivalents in primary positions

The academic staff associated with the study program consists of 6,3 full-time equivalents, distributed among 8 faculty members. All of them hold their primary employment at the institution. Of the 8 employees, 6 have at least associate professor qualifications (førstestillingskompetanse), which constitutes 80,9 per cent of the full-time equivalents. With this, the quantitative requirements for the academic environment have been met.

How the academic environment covers key areas

About half of the members with a least associate professor qualifications have PhD degrees within computer science or in information technology which can be considered to cover software development in a broad interpretation. The remaining faculty members with at least associate professor qualifications hold PhD degrees in fields adjacent to computer science. All faculty members in the academic team with at least associate professor qualification hold master's degrees in computer science or in information technology. The committee considers this to be sufficient, but as described in 3.4.1, NUC will need to hire additional staff to fulfil the requirement in 3.4.1.

Conclusion

The requirement is fulfilled.

3.4.5 The academic environment's research and/or artistic research and academic development work

Academic Supervision Regulations

Section 2-3 (5) The academic environment must be actively engaged in research and academic development work and/or artistic research and be able to demonstrate documented results with a satisfactory quality and scope in relation to the programme's content and level.

New regulation (Forskrift til universitets- og høyskoleloven):

§ 1-13. Særskilte krav til studietilbud på lavere grad

Tredje ledd: Fagmiljøet skal drive forskning eller kunstnerisk utviklingsarbeid og faglig utviklingsarbeid innenfor studietilbudets fagområde. Fagmiljøet skal kunne vise til dokumenterte resultater av en kvalitet og i et omfang som er tilfredsstillende for studietilbudets innhold og nivå i samsvar med kvalifikasjonsrammeverkets nivå 6.

Assessment

The general organisation of research and academic development at NUC rests on the three pillars of teaching, research, and industrial collaboration, and NUC aims for around 30 %

research time for senior academic staff. The application enumerates more than 61 research publications in the period 2020-2024.

The application does not provide a detailed account of how the research activities and publications of the associated academic staff specifically relate to the study programme and to the professions/disciplines of software development and software engineering. Almost all the publications of the academic staff (with a few exceptions in teaching research and secure coding) are within machine learning, artificial intelligence, communication technology, and cyber security, and hence not directly related to core area of software development and software engineering. This is also impacting the assessment in 3.3.6 and 3.4.6. A comprehensive source of venues in the form of international conference and journals within software development is the Software Engineering World mailing list⁵.

The committee acknowledges that the research activities underlying the listed publications may have involved the development and construction of software (e.g., to undertake experimental evaluation and/or to demonstrate proof-of-concept), but they do not represent research publications and research activities focusing on software development and software engineering as a profession/discipline per se.

The application describes the study programme as: "The bachelor's degree is designed to provide students with a comprehensive, practical education in software design and development, focusing on the skills required to succeed in a dynamic and rapidly evolving industry. The programme emphasises the development of hands-on expertise, through the application of software development techniques, including the increasing influence of AI-supported software development, as well as theoretical concepts." The application and the provided CVs do not document that the academic team have any strong industrial work-life experience or practical experience within software development and engineering. Alignment with the expressed practical intent and technological focus of the study programme may be done by explicitly describing involvement of the academic staff in software development projects (in research and/or industry), and by providing examples of software artefacts resulting from such projects.

The institution is required to:

- Demonstrate a solid track-record of research activities and publications within international software development and software engineering research venues.

Assessment after response from the institution to the initial report

NUC has not made any changes to the composition of staff members for the study programme. Publications from two selected staff members have been made explicit in the response from NUC, but the research papers listed are in educational research and not

⁵ <https://listserv.acm.org/scripts/wa-acmplpx.exe?A0=seworld>

international venues related to software development. The committee therefore maintains its initial assessment.

Conclusion

The requirement is not fulfilled.

The institution is required to:

- Demonstrate a solid track-record of research activities and publications within international software development and software engineering research venues.

3.4.6 The academic environment's external participation

Academic Supervision Regulations

Section 2-3 (6) The academic environment for programmes that lead to a degree must actively participate in national and international partnerships and networks that are relevant for the programme.

New regulation (Forskrift til universitets- og høyskoleloven):

§ 1-12 Generelle krav til fagmiljø

Fjerde ledd: Fagmiljøet tilknyttet studietilbud som fører fram til en grad og andre studietilbud av et omfang på 60 studiepoeng eller mer, skal delta aktivt i relevante nasjonale og internasjonale samarbeid og nettverk.

Assessment

The application refers to collaboration with industry partners generically and explicitly enumerates IKT Norge (national ICT interest organization), Sopra Steria (consultancy within security), and Netsecurity (cyber security domain). Sopra Steria and Netsecurity can only be considered indirectly relevant network/industry contacts for the study programme as their primary business area do not appear to be within the fields of software development and software engineering. This makes the enumerated industry contact points only weakly relevant for the study programme.

The application documents international research collaboration via the provided publication lists and CVs, but the publications are primarily within machine learning, artificial intelligence, communication technology and cyber security (as discussed in 3.4.5). This means that the international research collaboration is largely outside the study programme's core area of software development and software engineering (as defined in 3.3.6), and hence not directly of relevance.

A research project with University of South Wales on data disposal is listed in conjunction with staff and student exchange collaboration with Teesside University and Deakin University. Memberships of various interest groups within security and computer education are mentioned (but not detailed) in addition to various forms of national/international educational evaluation activities, programme committee membership, and reviewing work.

The committee therefore finds that these also reflects a weak linkage to the study programme.

The institution is required to:

- Establish contacts and collaboration with industry partners and/or public sector institutions that have their primary focus and/or business area within software development.
- Increase their participation in programme committees for international workshops, conferences, and journals within the field of software development and engineering.
- Provide details on how specifically the current network activities are of relevance for software development and software engineering.

Assessment after response from the institution to the initial report

NUC has provided a response document providing a detailed account of collaboration with industry and academia. This includes additional partners and details on research collaboration compared to the initially submitted application.

Conclusion

The requirement is fulfilled.

3.4.7 Supervision of professional training

Academic Supervision Regulations

Section 2-3 (7) For programmes involving mandatory supervised professional training, the members of the academic environment must have relevant and updated knowledge from the field of the professional training. The institution must ensure that professional training supervisors have relevant competence and experience in the field of the professional training.

New regulation (Forskrift til universitets- og høyskoleloven):

§ 1-12. Generelle krav til fagmiljø

Femte ledd: For studietilbud med obligatorisk praksis skal fagmiljøet tilknyttet studietilbudet ha relevant og oppdatert kunnskap fra praksisfeltet. Institusjonen må sikre at praksisveilederne har relevant kompetanse og erfaring fra praksisfeltet.

Assessment

Not applicable to this application

4 Conclusion

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

The committee does not recommend accreditation of the bachelor in advanced software development at Noroff University College.

The following requirements in Forskrift til universitets- og høyskoleloven are not fulfilled:

§ 1-10. Generelle vilkår for akkreditering

Et vilkår for akkreditering av studietilbud er at kravene i universitets- og høyskoleloven med forskrifter er oppfylt.

§ 1-11. Krav til studietilbud

g. Studietilbudet skal ha relevant kobling til forskning eller kunstnerisk utviklingsarbeid og faglig utviklingsarbeid.

§ 1-12. Generelle krav til fagmiljø

Første ledd: [...] og ha en sammensetning som dekker fag, emner og veiledningen som inngår i studietilbudet.

§ 1-13. Særskilte krav til studietilbud på lavere grad

Tredje ledd: Fagmiljøet skal drive forskning eller kunstnerisk utviklingsarbeid og faglig utviklingsarbeid innenfor studietilbudets fagområde. Fagmiljøet skal kunne vise til dokumenterte resultater av en kvalitet og i et omfang som er tilfredsstillende for studietilbudets innhold og nivå i samsvar med kvalifikasjonsrammeverkets nivå 6.

5 Documentation

24/01222-1	Noroff University College as – søknad om akkreditering av bachelor i avansert programvareutvikling
24/01222-2	Noroff University College as – institusjonsprofil
24/01222-10	Revidert dokumentasjon – BA i avansert programvareutvikling
24/01222-11	Innsending av revidert dokumentasjon – BA i avansert programvareutvikling
24/01222-14	Tilsvaret til rapport - Noroff University College as – akkreditering av bachelor i avansert programvareutvikling

6 Appendix

Learning outcome of the programme

K1 has broad knowledge of software development practices and processes, including design methodology, programming tools and techniques, software architecture, web and mobile development.

K2 has broad knowledge of mathematical concepts, tools and methods that are used in software development.

K3 is familiar with current and emerging research and development work in software development, both nationally and internationally.

K4 can update their knowledge, independently, within applied software development responding to technological advancements and industry trends.

K5 has knowledge of the software industry, businesses and society, recognising continuous evolution and how technological advancements influence digital transformation.

S1 can apply academic knowledge and industry research to solve real-world problems, making informed decisions based on both theory and best practices.

S2 can apply knowledge to manage time, resources, and team dynamics to meet project milestones and deadlines, ensuring that deliverables comply with industry standards.

S3 can reflect upon their own participation in software projects, identifying areas for improvement and implementing feedback to optimise solutions.

S4 can find, evaluate and refer to relevant academic and industry literature, data, and documentation, and integrate the information into software projects to address complex development issues.

S5 masters relevant tools, techniques, patterns and methodologies to design and develop software solutions.

S6 masters relevant development practices, testing frameworks, version control systems, IDEs and is familiar with AI-powered aids.

S7 masters effective and critical presentation of their practical work.

G1 has insight into relevant ethical considerations, including data privacy, security, intellectual property, and the responsible use of software in societal contexts.

G2 can plan and carry out management of software development projects from initial planning to delivery, independently or collaboratively, in accordance with industry standards and ethical guidelines.

G3 can communicate clearly, both in writing and orally, to articulate technical and non-technical aspects of software solutions, including results, design choices, and coding approaches, to both professional and non-expert audiences.

G4 can exchange opinions and experiences with peers and professionals, thereby fostering collaborative innovation and contributing to best practices in applied software development.

G5 is familiar with innovation and entrepreneurship within the tech industry, and the creation of new products, services, or technologies through creative problem-solving and project development.

The accreditation process

NOKUT makes an administrative assessment to ensure that the application and documentation is suitable for external expert review. 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 University and University Colleges Declaration. The institution is given the opportunity to comment on the committee's composition.

NOKUT is responsible for the training and guidance of the experts during the entire process. Based on the documentation the expert committee writes their assessment. The expert committee conclude either with a yes or no, as to whether the quality of the educational provision complies with the University and University Colleges Declaration. NOKUT also requests that the expert committee advise on further improvements of the programme. All criteria must be satisfactorily met before NOKUT accredits a programme.

If the expert committee recommends accreditation of the programme, the report is sent to the applicant institution, which is then given one week to comment on factual errors. If the committee do not recommend accreditation of the programme, the applicant institution is given three weeks to comment and make smaller adjustments to the programme. The committee receives the institutions comments and submits a revised assessment. The Head of higher education then reaches a final decision about accreditation.

Presentation of the expert committee

Associate Professor Erik Hjelmås, NTNU

Erik Hjelmås holds a Cand.mag. degree (1994) in computer science and mathematics, an M.Sc. (1996) in information science with a specialization in artificial intelligence from the University of Pittsburgh, and a Dr.scient. (2005) in computer science with a dissertation on facial recognition from the University of Oslo. He has been employed at NTNU (formerly Gjøvik University College) since 1996, where he teaches the courses Operating Systems and Infrastructure: Secure Core Services. He has previously taught courses such as Infrastructure as Code, System Administration, Data Communication and Network Security, Computer System Security, Artificial Intelligence, IT for Teachers, and Computer Engineering. Hjelmås has published peer-reviewed articles in the fields of facial recognition, system administration, information security, and curriculum development. He has played a key role in developing the academic environment in IT operations and cybersecurity at NTNU's Gjøvik campus and currently serves as the local program director for the Bachelor's degree in Digital Infrastructure and Cybersecurity.

Professor Lars Michael Kristensen, Western Norway University of Applied Sciences (HVL)

Lars Michael Kristensen holds a Ph.D. (2000) and an M.Sc. (1996) in computer science from Aarhus University, Denmark. Since 2009, he has served as a professor of computer science and software development at HVL (formerly Bergen University College). Prior to this, he held a postdoctoral position at the University of South Australia (2000–2002) and was an associate professor at Aarhus University (2002–2009). Kristensen has taught computer science and software development at the bachelor's, master's, and Ph.D. levels, and has supervised over 20 bachelor's projects, 30 master's theses, and 15 Ph.D. dissertations in these areas. He has published more than 100 papers in international workshops, conferences, and journals, and has led or participated in several externally funded research projects in collaboration with industrial partners such as Hewlett-Packard, Nokia, Ericsson, the Australian Defence Science and Technology Organisation, Atlas Copco, Schneider Electric, and Bouvet. From 2009 to 2016, he led the development of the research environment and the accreditation of the Ph.D. program in computer science at HVL, and from 2016 to 2022, he chaired the Ph.D. program committee. Between 2020 and 2022, he led the establishment of the Master of Science education in Applied Computer Science and Engineering at HVL and has served as its study program coordinator since 2022. Kristensen has been a member of the executive committee of the Norwegian National Council for ICT since 2014 and is a member of the Norwegian Academy of Technological Sciences.

Student Mads Madsen Klepper, University of Agder

Mads Madsen Klepper holds a bachelor's degree in Multimedia Technology and Design from the University of Agder, where he worked on the development of a full-stack web application as part of his bachelor's project. He is currently pursuing a master's degree in Multimedia and Educational Technology at the same university, writing his thesis on digital learning technologies for the Vocational College of Agder. Klepper has worked as a student consultant at Young Industrial Innovators (YI2), contributing to various technology and design projects. At the University of Agder, he has held several roles, including producer and assistant director for the web series Aktiv på Sørlandet, as well as student assistant in computer engineering and student mentor in programming. He has also worked with IT, marketing, and design for several student organizations during his studies. Klepper has previously served as an expert for NOKUT on an application for accreditation of a master's programme.



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