

AKKREDITERINGS- RAPPORT

**Bachelor i digital etterforskning og
hendelseshåndtering**
NOROFF University College AS

2023



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Grad / Studiepoeng	Bachelor / 180 studiepoeng
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Introduction

The external quality assurance performed by NOKUT consists of a periodic supervision of the institutions' systematic work on assuring and enhancing the quality of the education they offer, 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.

An expert committee appointed by NOKUT has evaluated the application from NOROFF University College AS for the accreditation of *Bachelor i Digital etterforskning og hendelseshåndtering* (Bachelor in Digital Forensics and Incident Response) and its assessments are found in this report.

The Bachelor in Digital Forensics and Incident Response at NOROFF University College AS fulfils the conditions for accreditation in the Quality Assurance Regulation in Higher Education. The provision is accredited by the decision made 28. June 2023.

About this report

NOKUT's methodology for accreditation of new provisions entails, as described in attachment 2 in this report, that the experts have the possibility to change their assessments and conclusions during the accreditation process, if new information is provided. This is the case with this report. The committee's additional assessment is found under the appropriate sections.

Nina Waaler
Director of the Department for Accreditation and Quality Assurance

Innhold

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1 Information regarding the applicant institution

Noroff University College (NUC) was established in 1987 and offers programmes on the following levels: upper secondary (EQF/NQF level 4), tertiary vocational education (EQF/NQF level 5), and higher education (EQF/NQF level 6). The college was established in 2012 in Kristiansand. NUC is a non-accredited education institution and must thus apply to NOKUT for accreditation of all education programmes. NUC provides both campus- and on-line education and training. So far, NUC has had the following programmes accredited by NOKUT:

- Bachelor degree programme in Digital Forensics (180 ECTS), 2012
- Bachelor degree programme in Interactive Media, specialisation in Animation and Games (180 credits), 2012
- Bachelor degree programme in Applied Data Science (180 ECTS), 2017
- Bachelor degree programme in Cyber Security (180 ECTS), 2018.

2 Decision

NOKUT made the following decision on 28. June 2023:

NOKUT considers that the criteria in the regulations are fulfilled.

The application for accreditation of a Bachelor programme in Digital Forensics and Incident Response (180 ECTS) at NOROFF University College is therefore approved.

The original decision in Norwegian:

Vilkårene i NOKUTs forskrift om tilsyn med utdanningskvaliteten i høyere utdanning av 9. februar 2017 (studietilsynsforskriften) er oppfylt.

NOKUT akkrediterer bachelor i Digital etterforskning og hendelseshåndtering (180 studiepoeng) ved NOROFF University College AS. Akkrediteringen er gyldig fra vedtaksdato.

3 Expert assessment

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

3.1 Summary

Digital Forensics and Incident Response (DFIR) is within the area of information assurance and security, which is widely documented to have a high demand for candidates. The application adequately documents the programme's link to industry and society's need for the qualifications. Graduates from DFIR will manage the security of cloud and on-premise IT-systems in companies, and ensure regulatory compliance.

The academic staff seems to be sufficiently qualified. There are however some inconsistencies in staff descriptions compared to another, parallel, application from the same institution. The applicant must explain this discrepancy prior to an accreditation. The committee also has some recommendations for the individual courses that make up the study programme.

Assessment after response from the institution to the initial report

The applicant has clarified the questions about the academic staff. They have also added more lectures in accordance with the recommendations made in the initial report. The committee now find the proposed study programme to fulfil all requirements.

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.

Assessment

Bachelor in Digital Forensics and Incident Response (DFIR) is a study programme in the first cycle (level six) of the national qualification framework and is regulated by the *Forskrift om opptak til høgare utdanning*. The admission requirements are

- Higher Education Entrance Qualification, and
- Candidates must be able to document proficiency in the English language. Language requirements by Samordna Opptak
- Mathematics R1

The admission process is based on first-come-first-serve admission for qualified applicants for an annual start-up date in August each year.

The admission requirements are satisfactory.

The diploma and the Diploma Supplement are satisfactory.

Conclusion

Yes, the requirements are fulfilled.

The institution is advised to:

- Specify S1+S2 as an alternative mathematics requirement to R1

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.

Assessment

The program's content and structure, encompassing its progression, learning outcomes, teaching methods, and assessment methods, are all clearly and comprehensively described.

Furthermore, each course within the program is accompanied by a detailed course description. Although opportunities for student exchange are mentioned in the Study Plan, the information provided is not particularly specific. Specifically, the plan indicates that further details on this topic can be found within NUC's v07LMS for currently enrolled students. However, this information may not be useful for the students seeking to learn more about the program's offerings.

The Study Plan does not provide any details on how the program will help the student in their future academic pursuits, such as pursuing a higher degree or career advancement in the same field.

A study plan should typically include information on the skills and knowledge that the student will acquire during the program, and how those skills and knowledge will be applicable to their future academic and career goals. This information can help students make informed decisions about their academic pursuits and ensure that their studies align with their long-term goals.

Conclusion

Yes, the requirements are fulfilled.

The institution is advised to:

- consider providing more specific information about student exchange opportunities within the Study Plan itself, rather than referring students to the LMS. This will make it easier for prospective students to get a comprehensive understanding of the program's offerings.
- include information about how the program will prepare students for future academic pursuits and career advancement within the Study Plan.

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.

Assessment

NUC has chosen "Digital Forensics and Incident Response" as the name of the study program in English and "Digital etterforskning og hendelseshåndtering" in Norwegian. The name of the study program is considered to cover its profile and level. The learning outcome description provides a good description of the study program and reflects the knowledge, skills, and general competence one would expect a candidate to acquire through the study program Digital Forensics and Incident Response where a relatively large part of the study is ICT / Digital Forensics and Incident Response education. The learning outcome descriptions are also in line with the general learning outcome descriptions given in the National Qualifications Framework for Lifelong Learning, Level 6.2 Bachelor (1st cycle).

Conclusion

Yes, the requirements are 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.

Assessment

Graduates from DFIR will work with identifying, responding and investigating cyber-attacks and criminal activity in job roles such as

- Digital Forensics Investigator
- Intrusion Analyst
- Cyber Security Incident Responder
- Cyber Security Analyst
- CERT Specialist
- SOC Analyst

The area of information assurance and security in general is widely documented to have a high demand for candidates, and this also includes the subarea where DFIR belongs. The application documents adequately the link to industry and the needs for the study programme in society, however NUC should expand their links to concrete independent industry and academia partners. The link to Sopra Steria appears mostly through Erik David Martin who was a student at Noroff himself in 2019. The link to DFIRLABS is also not completely independent as Noroff staff member Veronica Schmitt is a Non-Executive Director at DFIRLABS. The academia link to Østfold University College is through Ricardo Colomo-Palacio who states on his webpage "His research interests include software governance, management information systems, software project management, people in software projects, software and services process improvement and management information systems", in other words his field of expertise is not DFIR.

The list of possible job roles after graduation is satisfactory, and the application provides several concrete examples of positions in Norway which the candidates will be qualified for. The application lists seven different and relevant master's programmes DFIR qualifies for.

The course descriptions list relevant and mostly up to date reading material, but NUC should look closer at four courses:

- In the course "Programming and Databases" there is no mention of any material on databases, there is only listed the same material as in "Introduction to programming".
- In the course "Networking Fundamentals", the book by Kurose and Ross is out in a newer version.
- In the course "Operating Systems and Computer Architecture", the reading list only lists the three old classic books, NUC should consider newer and more modern books like "Operating Systems: Three Easy Pieces" by Arpaci-Dusseau and Arpaci-Dusseau; and "Operating systems: Principles and practice" by Anderson and Dahlin.
- In the course "Mathematics 2" the learning outcomes are mostly about statistics, but not textbook in statistics is listed.

The application discusses recruitment of candidates to DFIR but does not address what the most similar existing bachelor programmes are, and whether these have a high number of applications for admission. Since DFIR replaces an existing study programme in Digital forensics at NUC, yearly intake and graduation numbers from this programme should be included in the application. This must be addressed.

The institution is required to:

- Improve the discussion of recruitment of candidates: NUC must address what the most similar existing bachelor programmes are, and whether these have a high number of applications for admission. Since DFIR replaces an existing study programme in Digital forensics at NUC, yearly intake and graduation numbers from this programme should be included.

Assessment after response from the institution to the initial report

NUC has provided a separate document “DFIR Candidate Recruitment” where numbers from DBH are cited and the student numbers from their current Bachelor in Digital Forensics are presented and discussed. The committee finds this additional information sufficient.

Conclusion

Yes, the requirements are fulfilled.

The institution is advised to:

- expand their links to concrete independent industry and academia partners
- update reading lists in "Programming and databases", "Networking Fundamentals", "Operating Systems and Computer Architecture" and "Mathematics 2"

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.

Assessment

The program's workload of 1500 hours per year is illustrated in the application, with the first and second years allocated 28% each (432 hours), and the third year set aside around 24% (328 hours) for guided education or organized learning activities. The remaining time is designated for self-study, as well as preparing and conducting assessments. According to the expert committee's evaluation, the overall workload and the proportion of organized learning activities are satisfactory. Only 30% of the organized learning activities are in the form of lectures, with the majority of the time being allotted to lab work and exercises. The expert committee recommends an increase in the number of lectures offered, see section 3.3.5.

Conclusion

Yes, the requirement is fulfilled.

3.3.4 The programme's content, structure and infrastructure

Academic Supervision Regulations

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

Assessment

The program consists of 17 compulsory courses and 3 electives (students must choose two of these three). Of these, computer science courses are already existing courses that are included in NUC's other bachelor's programs. The elective courses are specifically designed for this program.

NUC will offer a Bachelor in Digital Forensics and Incident Response to students both at the main campus in Kristiansand, a satellite / decentralized campus in Oslo, and as an online study. NUC's premises in Kristiansand have group rooms, auditoriums, eating areas, computer laboratories, a cybersecurity laboratory, and specially adapted workrooms. The premises in Oslo have eating areas, auditorium, and classrooms, some of which are equipped with desktops, computer laboratories, and group rooms. There is a physical library in Kristiansand with a satellite in Oslo. Both campus students and online students have access to an electronic library system for resources from ACM digital library, Ebsco, Brown University e-books, Science Direct, free full access to LinkedIn Learning. Online students and students at the Oslo campus follow the teaching through a Virtual Learning Environment (VLE). VLE consists of an LMS, a system for streaming lectures, a virtual laboratory, and a chat service. Students can follow the lectures online and participate in practical exercises via the virtual laboratory.

Overall, we consider it so that the infrastructure is sufficient for the students to take part in the teaching and achieve the specified learning outcomes both at the main campus in Kristiansand, the decentralized campus in Oslo, and online. We also consider it positive that NUC intends to have parts of the academic staff located on the Oslo campus.

The programme's content, structure and infrastructure are generally adapted to the learning outcome.

However, the institution is advised to the following updates:

- Programming course should be a prerequisite for Programming and Databases course
- Mathematics 1 should be a prerequisite for Cryptography course
- Programming should be a prerequisite for Operative systems course (based on the described learning outcome)
- Consider suitability of Kurose og Ross textbook for Networking course since it is designed for introductory one-semester or one-year courses in communications networks in *upper-level undergraduate* programs

Conclusion

Yes, the requirements are fulfilled.

The institution is advised to:

- make the programming course a prerequisite for Programming and Databases course
- add a database textbook to the list of recommended literature for Programming and Databases course
- make mathematics 1 a prerequisite for Cryptography course
- make programming a prerequisite for Operative systems course (based on the described learning outcome)
- consider the suitability of the Kurose and Ross textbook for the networking course, since it is designed for introductory one-semester or one-year courses in communications networks in *upper-level undergraduate* programs
- consider whether a requirement that all courses in the study programme, both mandatory and elective courses, must be passed before this course examination can be assessed is too hard.

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.

Assessment

The application discusses in depth the planned use of teaching, learning and assessment methods in DFIR. The discussion is supplemented with attachments:

- "Mapping of Programme Learning Outcomes" which documents how each course contribute to the programme learning outcomes.
- "Mapping of indicative TL Methods to Courses" which documents how each teaching and learning method is intended to be used in the design and delivery of each course.
- "Teaching, Learning and Assessment Methods" which describes, justifies and explains the teaching, learning and assessment methods intended to be used in DFIR.
- "A Guide to Constructive Alignment at Noroff University College" which describes how constructive alignment is to be applied in courses at NUC.
- "Programme-level ILOs relevant to Introduction to Programming" which shows a complete example for one course on how its learning outcomes are mapped to programme learning outcomes, and how teaching and assessment methods are mapped to the course learning outcomes.

In other words, the application adequately documents the teaching, learning and assessments methods use in DFIR, but NUC is strongly advised to transfer this into the course descriptions since course descriptions are what the students will read and have their expectations from.

The teaching and learning methods at NUC are categorized as Teacher-led, Teacher-supported and Self-study. All three categories are present in each of the course descriptions. Teacher-supported work include practical work, workshops, scheduled guidance and group work. Self-study includes the use of sandbox-environments for developing the students as "independent learners that actively support their peers". These 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. However, it appears that only around 30% of the organized learning activities are lectures, with the remaining time allocated to lab work and exercises. There should be an increase in the number of lectures offered.

The institution is required to

- increase the number of lectures offered

Assessment after response from the institution to the initial report

NUC has increased the number of Teacher-Led Activities in Table 5 "Overview of Study Workload". The committee acknowledges this to be a sufficient increase in lectures that will be offered in each course.

Conclusion

Yes, the requirements are fulfilled.

The institution is advised to:

- differentiate teaching, learning and assessment methods in the course descriptions.

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.

Assessment

Digital forensics and incident response involves the identification, preservation, analysis, and presentation of digital evidence to investigate and respond to security incidents. It includes activities such as incident response planning, digital evidence collection, forensic analysis, and reporting. NUC describes teaching as research-based in each of the courses where students will be provided with current and emerging concepts and ideas via a variety of sources including relevant conferences and journals, ongoing research at NUC, and the related network of national and international academics. In addition, some members of teaching staff have relevant publications in the recent years. The programme has satisfactory links to research and academic and/or artistic development work.

Conclusion

Yes, the requirements are fulfilled.

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.

Assessment

NUC's bachelor's degree program places a high priority on the use of English and international resources in evaluating the program. Essential reading materials, including books, publications, and other resources, are in English, and the program's academic team has developed most of the learning materials and content in English. To enhance the program'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 program. These measures collectively foster a diverse and internationalized learning environment for students. The committee has determined that these measures are sufficient for internationalization in a bachelor's degree program.

Conclusion

Yes, the requirements are fulfilled.

3.3.8 The programme's arrangements for international student exchangeAcademic 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.

Assessment

Student mobility is a significant priority for NUC, and the institution has developed an exchange program that allows students to search for relevant courses globally and apply to have the exchange incorporated into their studies. NUC has entered into exchange agreements with esteemed universities, such as Deakin University, Australia, and Teesside University, UK, to guarantee high-quality educational opportunities. However, the exchange program is not restricted to these partner institutions, and students can apply to other universities they have agreements with, providing them with a diverse range of options when seeking to study abroad. NUC prioritizes academic quality, and the application process is tailored to ensure that the exchange is academically relevant and contributes to the student's education at NUC.

Conclusion

Yes, the requirements are fulfilled.

3.4 Requirements of the 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.

Assessment

The application states the teacher/student ratio to be 1:24 which is sufficient. The academic environment consists of two professors (1.2 Full-Time Equivalents (FTE)), one førstelektor (1.0 FTE), one høyskolelektor (1.0 FTE) and three høyskolelærere (2.1 FTE). In addition, there is a planned hiring of an associate professor in incident response which will

contribute 1.0 FTE in DFIR. This totals in 6.3 FTE (including 1.0 FTE NN) which is a satisfactory size for the academic team, however the following needs to be clarified:

- One person is listed as Lecturer in the DASM table and høyskolelærer in the table for another study programme that the institution has applied for accreditation for, and the application states that Lecturer is a translation of høyskolelektor. Is this person høyskolelærer or høyskolelektor?
- The Junior lecturers (Høyskolelærere) are both listed with 0.8 FTE in both DASM and DFIR without any mention of the participating in both programmes.

The attached table “Mapping of competence and Core Element coverage” adequately describes how the academic team covers the mandatory courses including overlapping coverage. This is supported by the CVs of the academic team. In other words, the composition of the academic team covers the DFIR programme’s topics and subjects.

DFIR is described as composed of four core elements, one of which is “Incident Response”. NUC has provided the announcement text for the position in incident response, and one assistant professor has incident response as one of her fields of expertise.

In attachment “Ansettelsesplan for personell til ny utdanning” NUC documents a clear plan for expanding the academic team when needed, and the attachment “The Academic team” lists eight supporting scientific personnel who contribute to DFIR but in less than 0.1 FTE.

The application including attachments adequately discusses and documents the academic environments composition, size and competence.

The institution is required to:

- clarify the position of the person listed as both høyskolelærer and høyskolelektor
- explain the contribution in FTE from the two Junior lecturers listed for both the new programmes

Assessment after response from the institution to the initial report

NUC has clarified the position of the person listed as both høyskolelærer and høyskolelektor, as høyskolelærer. NUC has removed the two junior lecturers from the academic team. In addition they have increased the contribution of the planned associate professor position in Cloud Computing from 0.6 FTE to 1.0 FTE. And they have further added another planned assistant professor position with a 1.0 FTE contribution to the academic team. The size of the academic team after recruitment of the two planned positions will be 6.1 FTE.

Conclusion

Yes, the requirements are fulfilled.

3.4.2 The academic environment’s educational competence

Academic Supervision Regulations

Section 2-3 (2) The academic environment must have relevant educational competence.

Assessment

NUC has academic staff with both formal and experience-based pedagogical competence. However, the requirement notes that the applicant institution should also actively facilitate the updating and development of this competence. Furthermore, guidelines for basic pedagogical competence should be used as a minimum standard. The expert committee cannot see that NUC has any program or scheme for updating and developing educational expertise, which ensures that all staff have or can acquire basic pedagogical competence.

NUC should also ensure that all its academic staff meets the guidelines for basic pedagogical competence, as a minimum standard, and have access to opportunities for ongoing professional development. This will not only help ensure that all staff have a solid foundation in pedagogical practices, but also enable them to continuously improve their teaching skills and keep up with the latest trends and innovations in education.

The institution is required to:

- Explain how they ensure that all academic staff meets the guidelines for basic pedagogical competence as a minimum standard. This will help ensure that all staff have a solid foundation in pedagogical practices.

Assessment after response from the institution to the initial report

NUC explains how they ensure that all academic staff meets the guidelines for basic pedagogical competence as a minimum standard. The university college has been working on the development of a non-credit bearing course covering the updated guidelines related to formalised pedagogical competence from UHR – this course will run from autumn 2023.

The committee finds this additional information sufficient.

Conclusion

Yes, the requirements are fulfilled.

The institution is advised to:

- prioritize updating and developing educational expertise as an important aspect of its overall mission. This could involve allocating resources specifically for professional development or creating incentives for staff to engage in training and development opportunities.

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.

Assessment

The information available in the application describes roles and their responsibilities concerning academic management and quality assurance and development of the study

program. Table 6 describes members of the academic team that will contribute to the program. However, it does not provide any indications about what roles the members of the team are assumed concerning the academic leadership (program leader, course leader, etc.)

Conclusion

Yes, the requirements are fulfilled.

The institution is advised to:

- provide specific information about the roles the members of the team are assumed concerning the academic leadership (program leader, course leader, etc.)

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.

Assessment

The academic staff affiliated with the programme consists of 6.3 Full-Time Equivalents (FTE) (including 1.0 FTE NN) with primary employment at NUC out of a total of 6.3 FTE (including 1.0 FTE NN). This meets the criteria of at least 50 %.

The application states that the core areas of the study programme are (the committee agrees that these are core areas for a bachelor's programme in DFIR):

- Computing
- Digital Forensics
- Incident Response
- Legal and Compliance

All areas are covered by 2.2 FTE professor/associate professor in permanent positions. The core area Incident Response is weakly covered but passes the minimum requirement. A new position has been allocated to the area of incident response and the announcement text is included in the application.

The academic staff in DFIR is in total composed of 2.2 FTE professor/associate professor out of a total of 6.3 FTE (including 1.0 FTE NN) which meets the requirement of 20 % at least associate professors.

The criteria and the demands specific to the cycle of the programme are fulfilled.

Conclusion

Yes, the requirements are 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.

Assessment

The academic team involved in the program consists of active researchers active involved in research on issues and problems related to the field of digital forensics and incident response, including teaching; delivery. The academic team has twenty-six (26) publications in relation to this degree and field of study during the last five (5) years. The academic team has also been involved in several related to the program projects in the recent years such as "An evidence-based approach to fighting cybercrime from the frontline: improving the effectiveness and efficiency of investigating cyber enabled crime". Most of the publications appear to be at NVI levels 0 and 1, but the committee considers the production to be sufficient for the bachelor's degree level (first cycle), and the topics published within are relevant to the study. The committee considers this to be an adequate level of research and professional development work for a bachelor's degree program.

Conclusion

Yes, the criteria and the demands specific to the content and level of the programme are fulfilled.

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.

Assessment

The academic staff documents international collaboration through publication lists and CVs attached to the application.

The application describes national academic collaboration with Ricardo Colomo-Palacio at Østfold University College, regional networking through the startup of OWASP chapter

Kristiansand (lead by two of the academic team) and national industry collaboration with Sopra Steria, and international industry collaboration with DFIRLABS. NUC have active collaboration and/or student exchange with University of South Wales, U.K. (not documented), Teesside University, U.K. and Deakin University, Australia. The application lists these external participations as directly relevant for the study programme in terms of:

- Guest speakers/lecturers
- Breakfast meeting invitations
- Company visits
- Conference attendances
- Collaborative interdisciplinary workshops
- Practical industry related projects for students' studio practices and bachelor projects
- Exhibition and diffusion of students' bachelor projects

It is recommended that the faculty gets involved in national academic networks as well, as the link to Østfold University College is not strongly related to the field of DFIR as mentioned in chapter 3.3.2.

Conclusion

Yes, the academic environment actively participates in national and international collaborations and networks relevant for the programme.

The institution is advised to:

- Consider increased involvement in the national academic networks such as the NIKT-conferences, specifically UDIT, NISK and NIK

4 Conclusion

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

The committee recommends accreditation of the Bachelor in Digital Forensics and Incident Response at Noroff University college AS.

5 Documentation

22/09247-1 NOROFF UNIVERSITY COLLEGE AS - søknad om akkreditering av bachelor i Digital etterforskning og hendelseshåndtering

22/09247-5 Supplerende dokumentasjon — NOROFF UNIVERSITY COLLEGE AS - Akkreditering av bachelor i Digital etterforskning og hendelseshåndtering

22/09247-10 Tilsvar til søknad - NOROFF UNIVERSITY COLLEGE AS - Akkreditering av bachelor i Digital etterforskning og hendelseshåndtering

Appendix

Learning outcome of the programme

Knowledge

The Candidate...

- has broad knowledge of procedures, methods and standards that are used for the preservation and analysis of digital devices
- has broad knowledge of core computing concepts relevant to digital forensics and incident response
- has broad knowledge of applicable legislation and ethics that apply to digital forensics and incident response
- has knowledge of roles and responsibilities within digital forensics and incident response
- is familiar with current practice, emerging research, and development work within digital forensic and incident response
- can update their knowledge of processes, procedures, methodologies and toolset relevant to digital forensic and incident response
- has knowledge of the significance of digital technology and its place in society

Skills

The Candidate...

- can apply knowledge of digital forensics and incident response to undertake investigations and the remediation of digital systems from cyber-attacks
- can apply knowledge of complex digital information to inform decisions and investigation direction
- can reflect upon their own academic practice, with an ability to adapt and adjust to new situations given appropriate academic guidance and support
- can find, evaluate, and refer to information, emerging research, and case studies to present sound solutions to problems

- masters relevant tools and techniques to conduct investigation of digital evidence and cyber incidents
- masters relevant techniques to interpret, present and communicate information, data, and cases logically

General Competence

The Candidate...

- has insight into moral and ethical issues related to academia and digital forensics and incident response
- can plan and carry out assignments and projects over time, individually or as part of a team, in accordance with a given brief
- can communicate in both written and verbal formats to ensure the information is presented and conveyed appropriately
- can exchange opinions and experiences with peers and discipline professionals regarding practice and efficient procedures within digital forensics and incident response, thereby contributing to both organisational and personal development
- is familiar with current and evolving processes and emerging technologies within digital forensics and incident response

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 Academic Supervision Regulations and Regulations on Quality Assurance in Higher Education. 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 requirements the Academic Supervision Regulations and Regulations on Quality Assurance in Higher Education. 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 Director of Accreditation and Quality Assurance then reaches a final decision about accreditation.

Presentation of the expert committee

The Academic Supervision regulations section 5-6 determine the expert committee requirements for accreditation of study programmes at the bachelor's and master's level.

- **Førsteamanuensis Erik Hjelmås, NTNU**
Hjelmås er utdannet Cand.mag (1994) med informatikk og matematikk, M.Sc. (1996) innen informasjonsvitenskap med fordypning i kunstig intelligens (University of Pittsburgh) og Dr. scient. (2005) innen informatikk med en avhandling innen ansiktsgjenkjenning (UiO). Han har vært ansatt ved NTNU (tidligere HiG) siden 1996, og underviser emnene "Operativsystemer" og "Infrastruktur: sikre grunntjenester" og har tidligere undervist emnene Infrastructure as Code, systemadministrasjon, datakommunikasjon og nettverkssikkerhet, datasystemsikkerhet, kunstig intelligens, IT for lærere og datateknikk. Han har publisert fagfelleverderte artikler innen ansiktsgjenkjenning, systemadministrasjon, informasjonssikkerhet og studieprogramutvikling. Han har også vært sentral i oppbyggingen av fagmiljøet innen IT-drift og cybersikkerhet ved NTNU campus Gjøvik og er lokal leder for studieprogrammet Bachelor i digital infrastruktur og cybersikkerhet.
- **Professor Vladimir A. Oleshchuk, Universitetet i Agder**
Oleshchuk har en ph.d. i Computer Science (1988) fra Taras Shevchenko National University i Kiev, Ukraina. I årene 1981-1987 har han besatt ulike stillinger ved forskningsinstitusjoner i Ukraina. I 1987–1992 var han ansatt som førsteamanuensis ved Universitetet i Kiev. Siden 1992 har han vært ansatt ved Universitetet i Agder (tidligere Høgskolen i Agder). I 2004 ble han tilsatt som professor i Computer Science – information security ved Institutt for informasjons og kommunikasjonsteknologi, UiA. Oleshchuk underviser i sikkerhetsrelaterte emner, matematikk og programmering på bachelor/master/ph.d. Han har også vært veileder for flere enn 40 studenter på master og ph.d-nivå. De viktigste temaene i Oleshchuks forskning kan relateres til aktiviteter som sikkerhet, personvern og sikkerhet for trådløse systemer og deres applikasjoner til e-helse, trådløse sensornettverk, P2P-systemer og mobile systemer. Hvordan man anvender formelle metoder for å håndheve sikkerhet som tekstanalyse og dataanalyse for å bevare personvern er også et sentralt tema. Oleshchuk kan vise til over 150 vitenskapelige artikler innenfor disse fagområdene. Utover sin undervisnings og forskerkarriere har Oleshchuk bl.a. jobbet som ekstern konsulent, vært deltager i flere evalueringer, vært reviewer for en rekke internasjonale tidsskrift og vært opponent i flere ph.d. disputaser både i Norge og i utlandet. Over en rekke år har Oleshchuk vært sakkyndig for SKVC (tilsvarende NOKUT i Litauen) og for NOKUT.
- **Lorena Alina Alexandru, student ved Høgskulen på Vestlandet**
Alexandru er student ved bachelorstudiet i cyberfysisk nettverksteknologi (cyberingeniør), Bergen. Alexandru har jobbet ved HVL som Mentor i Matematikk og Realfag for ungdomskoleelever og er nå prosjektleder for ENT3R HVL. Hun har jobbet som studentassistent i matematikk forkurs og i Elektrofag 2 med retting av obligatoriske innleveringer og hun ledet øvingstimer. Alexandru har også vært leder for Communica – linjeforeningen for cyber klassen. Inneværende semester jobber hun som studentassistent i Elektrofag Basis 1 (ELE141). Alexandru er

studentrepresentant i Innstillingsutvalget (IN) ved Fakultet for Ingeniører og Naturvitenskap og er fast medlem i Læringsmiljøutvalget (LMU). LMU har ansvar for at HVL har et inkluderende læringsmiljø og har et særlig ansvar for universell utforming og for å sikre et best mulig læringsmiljø for studenter med særskilte behov og funksjonsnedsetninger. Alexandru har vært klasserepresentant i tre semestre på studiet.



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