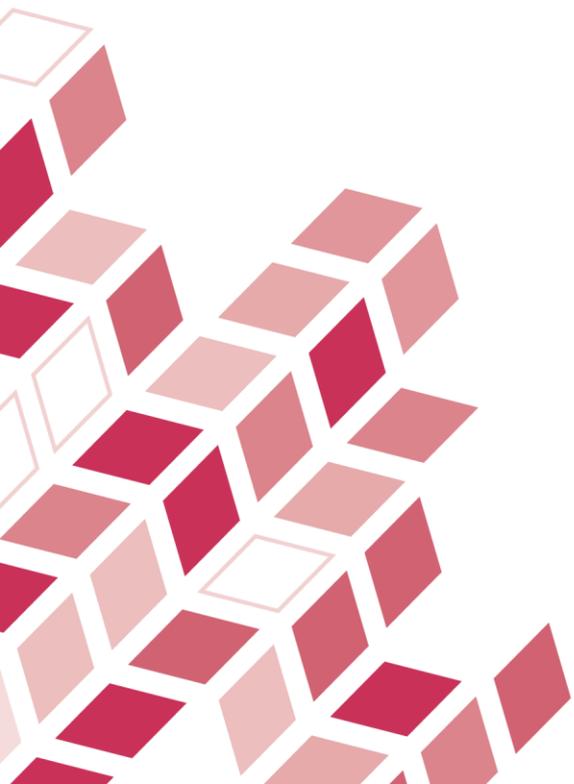


NOKUTS tilsynsrapporter

# Information systems

Master's degree programme at The Norwegian School of  
Information Technology (NITH)

september 2011



Institution:	The Norwegian School of Information Technology (NITH)
Name of educational provision:	Information Systems
Degree/Studiepoeng (ECTS):	Master. 120 ECTS
Expert Committee:	Associate professor Espen Andersen, BI Norwegian Business school Professor Birgitta Bergvall-Kåreborn, Luleå University of Technology
Archive Number:	11/200
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## Introduction

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

Hereby NOKUT presents the accreditation report of Master degree of Information systems at The Norwegian School of Information Technology (Norges informasjonsteknologiske høyskole). The expert evaluation in this report is part of the accreditation process following NITH's application for accreditation of Information Systems submitted before the application deadline on 15.03.2011. This report clearly indicates the extensive evaluation performed to ensure the educational quality in the planned educational provision.

Master of Information Systems at The Norwegian School of Information Technology fulfils the conditions expressed in the Regulation concerning NOKUT's supervision and control of the quality in Norwegian higher education (tilsynsforskriften).

This decision does not have limited validity in time. NOKUT will however make a subsequent supervision of the educational provision within 3 years.

Terje Mørland  
Director

Information on accreditation of educational provisions (in Norwegian):

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

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## 1 Background

NITH is a University College with institutional accreditation from NOKUT. NITH has power of self-accreditation for educational provisions in the first cycle, but has to apply to NOKUT for accreditation of educational provisions in all higher cycles.

The institution's quality assurance system was evaluated and accepted by NOKUT in 2011. The institution does not yet have any educational provisions with accreditation from NOKUT.

NITH applied for accreditation of Master of Information Systems 120 ECTS within the application deadline 15.03.2011.

## 2 Process

NOKUT makes a preliminary assessment to ensure that all basic conditions for accreditation are fulfilled as expressed in the Regulation concerning NOKUT's supervision and control of the quality in Norwegian higher education (tilsynsforskriften). For applications that have been approved, NOKUT appoints external experts for the evaluation of the application. The external experts have declared that they are not disqualified from performing a professionally independent evaluation.

The expert committee shall come to a clear conclusion, either yes or no, considering whether the quality of the educational provision complies with the requirements in the Regulation. The expert committee is also requested to advice on further developments of the provision. All criteria must be satisfactorily met before NOKUT makes a decision about accreditation.

If the conclusion reached by the expert committee is negative, the report will be sent to the applicant institution for commentary. The institution is given three weeks to comment on the expert committee's evaluation. Thereafter NOKUT makes a decision about whether the comments should be sent to the committee for additional consideration. The experts are given 2 weeks to submit the assessment. NOKUT then reaches a final decision about accreditation.

## 3 Preliminary assessment

### **Tilsynsforskriften § 4-1 Basic conditions for accreditation**

1. Demands expressed in the Universities and Colleges Act concerning the following arrangements will be assessed:
  - a. Internal regulations and governance
  - b. Appeals committee
  - c. Learning Environment Committee
  - d. Educational Plan
  - e. Diplomas and Diploma Supplement
  - f. Quality assurance system

#### NOKUTs assessment

NITH is accredited as a university college. Hence, it is presupposed that the demands expressed in the Universities and Colleges Act are fulfilled. The diploma supplement is evaluated as satisfactorily.

NOKUT has considered and found that the form of the application is satisfactory for expert evaluation.

## **4 Expert evaluation**

This chapter is the expert committee's evaluation. The term "We" refers to the expert committee as such. The numbering on each heading refers to the corresponding provision in the Regulation.

### **4.1 Basic conditions for accreditation**

#### **4.1.1 Demands expressed in the Universities and Colleges Act**

These demands have been evaluated by NOKUT in the Preliminary assessment.

#### **4.1.2 Demands expressed in national curriculum frameworks and in relevant Regulations issued by the Ministry of Education and Ressearch must be met.**

##### **Evaluation**

All demands in the regulation for Master degree are satisfactorily met by the applicant institution.. There are no national curriculum regulations for this program.

##### **Conclusion**

Yes, the condition is fulfilled.

#### **4.1.3 Estimates of student recruitment, as relevant in relation to the establishing of a satisfactory learning environment and stable provision, must be presented.**

##### **Evaluation**

- Sufficient base of bachelor students, 100 graduated annually.
- There is a need in the market for this kind of education, both in the private and public sector

However, there is also increased supply of these kinds of relatively general educations within IT (for instance, the University of Oslo is launching a direct competitor, a master of IT management, this year.

##### **Conclusion**

Yes, the institution's presentation is satisfactory.

#### **4.1.4 A plan of the students' expected workload must be presented**

##### **Evaluation**

- The number of hours and credits for each course (i.e., about four week's work) and for the programs in general is satisfactory and well documented.
- The structure and progression of the program is well put together, clearly illustrated and logical – for instance, having more classroom teaching in the early phases of the program and more thesis work and self-study towards the end is well balanced.
- The amount of work is typical of a Norwegian Masters program at intermediate-level institutions. It is, however, less than what is typically found at the leading institutions in Norway, such as UiO/IFI and NTNU.
- The allocation of hours and resources to the different learning aspects of the program is logical and well documented, both at the course and the program level.

##### **Conclusion**

Yes, the institution's presentation is satisfactory.

#### **4.1.5 When part(s) of the provision is taught outside the degree awarding institution formally agreed documents must be in place to regulate issues of importance for the students.**

##### **Evaluation**

Not applicable

##### **Conclusion**

Not applicable

#### **4.1.6 Overall conclusion of § 4-1, 2.-5., Basic conditions for accreditation**

The quality complies with the expected level according to the relevant provisions in the Regulation on NOKUT's supervision.

#### **Advice on further developments**

The application says nothing about what will happen to the Master programs now run in cooperation with Brunel – will they continue or will they be subsumed into the new program? We would recommend that the cooperative and competitive status and commitments of these programs be made clear to students before the program starts (4.1.2).

## **4.2 Study Plan**

In this section, the following is referred:

1. The educational provision must have an adequate title
2. The provision must be described with reference to learning outcomes
  - a. Learning outcomes must be expressed in terms of a candidate's intended achievements in knowledge, skills and general competence, as related to the National Qualifications Frameworks.
  - b. The provision's relevance for working life and/or continued studies must be clearly expressed.
  - c. Content and design of the provision must be satisfactorily related to the description of learning outcomes.

- d. Teaching and student work must be suited for the achievement of intended learning outcomes, as expressed in the plan.
  - e. Exams and other means of evaluation must be suited for the assessment of the students' attainment of intended learning outcomes, as expressed in the plan.
3. The provision must have satisfactory links to research and academic and/or artistic development work, adapted to its level, volume and other characteristics.
  4. The provision must be attached to student exchange and internationalisation arrangements adapted to its level, volume and other characteristics.

#### **4.2.1 The educational provision must have an adequate title**

##### **Evaluation**

- The program title is in line with similar programs at other institutions, both domestic and foreign.
- This is good for recognition purposes, but raises challenges in differentiation, particularly in a market where the number of similar educations is growing.
- The specialist titles, however, we feel are somewhat overreaching. We think the IS management and innovation specialization should be called just *IS Management*, and the Digital Business specialization should be called *Digital Business Systems*. In the first case, innovation theory and concepts form only a small part of the program, not sufficient to place Innovation in the title. In the second, the approach is driven, indeed defined, not from business areas, but from business applications (indeed, from terms set by the IT vendors themselves.)

##### **Conclusion**

Yes, the title of the provision is adequate

#### **4.2.2 The provision must be described with reference to learning outcomes**

**a. Learning outcomes must be expressed in terms of a candidate's intended achievements in knowledge, skills and general competence, as related to the National Qualifications Frameworks.**

##### **Learning outcomes as described in the application:**

##### **Overall learning outcomes:**

*Knowledge:* Candidates will have an advanced knowledge of information systems as a research field, in terms of theories, knowledge claims, research methods and professional standards. They will be able to apply this knowledge, and to reflect on how information systems contribute to business and societal aims.

*Skills:* Candidates will acquire practical skills in analysing complex IS problems, designing or recommending solutions, and in measuring and evaluating results. Candidates will also have strong skills in applying research methods and techniques.

*Competence:* Candidates will take responsibility for solving complex tasks and conducting a research project at a high standard in an organisation. This includes the ability to choose the appropriate research approach, to choose or develop a solution, to handle relationships ethically and professionally, and to evaluate and communicate the results in a systematic way.

## Learning outcomes for the specialisations:

The learning outcomes for the specialisations are shown in this table.

Specialisation	Knowledge	Skills	Competence
IS Management and Innovation	<p>Describe and discuss key theories on the role of IS in organisations</p> <p>Understand the role of IT in innovation processes</p>	<p>Analyse a real business case and assess alternative solutions</p> <p>Critically evaluate IS solutions</p>	<p>Taking responsibility to participate and contribute to an IT strategy or innovation process in an organisation</p> <p>Assess results in relation to IS innovation research, and communicate findings in a professional and ethical way</p>
Digital Business	<p>Describe and discuss key theories on how business systems support value creation in organisations</p> <p>Understand the role of business systems in innovation</p>	<p>Configure and implement key business systems</p> <p>Critically evaluate business systems solutions</p>	<p>Taking responsibility to participate and contribute to the implementation of a business system in an organisation</p> <p>Assess results in relation to digital business research, and communicate findings in a professional and ethical way</p>

## Evaluation

The main evaluation here is based on page 7 in the application and on the description for each course. This is systematically done and clearly defined.

However, there are weaknesses in description of the overall, general skills. A frequent problem when hiring IS managers is that they have applied skills (i.e. technical and methodological competence) but lack communicative and integrative skills – the very skills necessary to communicate with business management and help align the use and organization of IT with business objectives. We miss a specifically integrative activity – such as, for instance, a capstone course geared towards solving real-world issues in a case teaching context – to pull things together and create a shared intellectual foundation both for the program and for the school.

Overall, however, we will complement the application authors on their diligent work to make sure the learning objectives match the criteria set forth by the Dept of Education.

## Conclusion

Yes, learning outcomes are satisfactorily described.

## **b. The provision's relevance for working life and/or continued studies must be clearly expressed.**

## Evaluation

The competencies and skills acquired in this program are highly relevant for employment in the public and private sector.

The program satisfies the formal requirements for applying to a Ph.D. position in a Ph.d. education under the Bologna standard.

The program is, however, fairly broad and we would predict that students might have difficulty being accepted to more specific Ph.D. programs (for instance in innovation, business strategy or logistics).

### **Conclusion**

Yes, the provision's relevance for working life and/or continued studies is clearly expressed.

### **c. Content and design of the provision must be satisfactorily related to the description of learning outcomes.**

#### **Evaluation**

Overall, the link between activities, evaluations and learning outcomes is relevant and well documented. There is variety in the activities and the evaluation forms, promising a student body with eclectic skills, possessing knowledge, skills and general competence.

The content of the compulsory, shared part of the program is relevant and well related to the learning outcomes as described in the plan. The committee will always have slight differences in what we would like to see in an individual course, but overall the content of the courses is relevant, up to date, and research-based.

The specializations are rather broad within the chosen areas – for instance, one might question whether “ERP and Supply Chain” is part of Digital Business or just infrastructure (largely, it is a question of how it is used, which again is dependent on the type of industry). The IS and Innovation specialization is, as previously mentioned, a little thin on innovation, both innovation theory and in innovation implementation processes in organizations. This is, however, an explicit choice since this is a fairly general Master's degree anchored in market need rather than research area, but we would like to see some attempts to address this issue – or, as mentioned before, an adjustment of the specialization titles.

#### **Conclusion**

Yes, the provision's content and design is satisfactorily related to the description of learning outcomes.

### **d. Teaching and student work must be suited for the achievement of intended learning outcomes, as expressed in the plan.**

#### **Evaluation**

In general, the work and teaching methods make sense and are related to the learning outcomes and the nature of the education.

Given that this is a master program in IS and technology management, we wonder why there is little explicit use of new technologies in the courses. For instance, students could deliver papers written using Wikis or other sharing platforms, such as Google docs, use Youtube for video presentations, deliver documentation and reports in the form of web pages, and use social media for teaching and collaboration. We would encourage much more activity here, especially since the school is associated with institutions such as NKI which are recognized experts in this area.

There is little explicit use of distance-based learning and other technically based teaching forms. This is an area where the program can be better, and it might also help in making the international aspects of the program more concrete.

### **Conclusion**

Yes, the teaching and student work is suited for the achievement of intended learning outcomes as expressed in the plan.

### **e. Exams and other means of evaluation must be suited for the assessment of the students' attainment of intended learning outcomes, as expressed in the plan.**

### **Evaluation**

Overall, the evaluation forms make sense and are well related to the learning outcomes. We would, however, strongly recommend that classroom participation be an explicit evaluation criterion, with a focus on participation in discussions. This is particularly important least in some of the more management and systems development oriented courses, such as Consulting and Leadership, IT Governance, and Agile Project Management. A persistent problem in IS management is the gap in communications between business and IT managers – and making this an integrated part of teaching and evaluations would help address this issue (and, incidentally, would make for a great marketing point – here, students can learn to bridge one of the most important source of conflicts in business management.)

### **Conclusion**

Yes, exams and other means of evaluation are suited for the assessment of the students' attainment of intended learning outcomes as expressed in the plan.

### **4.2.3 The provision must have satisfactory links to research and academic and/or artistic development work, adapted to its level, volume and other characteristics.**

### **Evaluation**

The choice of literature in each course is relevant and largely research-based, with a mix of books giving the basic theory and articles giving more specialized or advanced concepts

The area as such is practically oriented, which means that the research literature is a good basis for practice, and often contains practical examples.

We would recommend that the research methods course be moved from the third semester to the second, both to put research methods in before students start to evaluate thesis topics, and also to underscore that research methods is not only something that is relevant to the dissertation, but also something that has relevance for investigations in general and evaluation of research-based theory for practical applications.

The program plan and the course descriptions do not specify clearly the degree to which the courses are anchored in practical experience in a company or public organization. We would recommend that at some of the courses have an explicit coupling to external organizations.

### **Conclusion**

Yes, the provision has satisfactory links to research and academic and/or artistic development work, adapted to its level, volume and other characteristics.

#### **4.2.4 The provision must be attached to student exchange and internationalisation arrangements adapted to its level, volume and other characteristics.**

##### **Evaluation**

There is internationalization in that all literature and course descriptions (and, by extension, teaching language) is in English.

There exists a memorandum between Brunel and NITH stating the aims, objectives and duration of the understanding. It does not include clarifications of roles, responsibilities, sharing and ownership of resources. It is not clear how this collaboration is integrated or even relevant for this program.

There is an agreement about recruitment of Ph.D. students from NITH to The University of Agder. Again, it is not clearly specified how this agreement is relevant or integrated to this program.

The same applies to the Kaunas agreement on international cooperation.

##### **Conclusion**

Yes, the provision has systems for student exchange and internationalisation arrangements adapted to its level, volume and other characteristics.

#### **4.2.5 Overall conclusion for § 4-2, Study plan**

The quality of the study plan complies with the expected level required in the Regulation on The quality of the study plan complies with the expected level required in the Regulation on NOKUT's supervision.

##### **Advice on further developments:**

We choose to not disqualify based on this criterion, but would like to underscore that we see the name change of the specializations as important (4.2.1).

Try to create a capstone course, if possible with direct involvement by companies representative of those you expect your students to be employed in (4.2.2).

Emphasize the differences between writing and communicating in an academic and business context, and make sure that the students are trained and evaluated in both – for instance by making sure that the course evaluations include both academic and business writing (if not in each course, at least with a sufficient proportion of each in the program as a whole) (4.2.2).

### **4.3 Discipline community/-ies attached to the provision**

#### **4.3.1 The composition, size and collective competence of the relevant discipline community/-ies must be adapted to the provision as the plan describes it and adequate for the conduct of relevant research and development work.**

##### **Evaluation**

As a school, NITH is young in research terms, and this program its first at the Master level.

The research environment and background of the faculty is very relevant to the program.

The team as a whole has good research productivity, write both together and with faculty at other institutions, and play a central part in IT research in Norway

The team has, both collectively and as individuals, contributed to furthering IT knowledge in Norway.

##### **Conclusion**

Yes, the composition, size and collective competence of the discipline community is adapted to the provision as described in the plan, and deemed adequate for the conduct of relevant research and development work.

#### **4.3.2 At least 50 per cent of the academic FTEs allotted to the provision must be members of the institution's own academic staff. Of these, professors (full or associate) must be represented among those who teach the core elements of the provision.**

For the different cycles specific demands apply:

- a. For first cycle provisions at least 20 per cent of the relevant discipline community/-ies must have competence as professors (full or associate).
- b. For second cycle provisions, at least 10 per cent of the relevant discipline community/-ies must be full professors, and an additional 40 per cent associate professors.
- c. For third cycle provisions, PhD or stipend programme for artistic development work, at least 50 per cent of the relevant discipline community/-ies must be full professors, and the rest associate professors.

##### **Evaluation**

The main courses are taught by the faculty responsible for the program, who all are adequately qualified to teach them.

##### **Conclusion**

Yes, we conclude that this criterion is fulfilled.

#### **4.3.3 The discipline community/-ies must be active in research and/or development work.**

##### **b. For the second cycle, documented results at a high level of quality.**

##### **Evaluation**

The teaching staff of the master education is active in research and publishes their work in journals and conferences. This is clearly documented both for each teacher and for the research group as a whole. There are also research and publications that relate to both of the two specializations as well as the education on a general level.

The journal publications for the research group as a whole are between 2-11 for the last 5 years,, with a clear increase since 2009.

Considering the increase in publications the last two and a half years, 20 journal publications between 2009-2011, we consider this OK.

##### **Conclusion**

Yes, we conclude that this criterion is fulfilled.

#### **4.3.4 The discipline community/-ies must participate actively in relevant national and international networks and collaborative arrangements/projects**

##### **Evaluation**

There exists a memorandum of understanding between Brunel and NITH intended to promote co-operation in the form of 1) research collaboration; 2) exchange of staff, scholars, and students; co-operative seminars, 3) workshops and other academic meetings. It does not include clarifications of roles, responsibilities, sharing and ownership of resources. The memorandum is, however, directed to collaboration on university level, not program level. Since all programs at NITH focus on IT and IS this collaboration is most certain relevant for the program under assessment, but, the document does not specify how this collaboration is integrated or relevant for this particular program.

NITH also has three ERASMUS agreements signed. There is an agreement about recruitment of Ph.D. students from NITH to Agder. Again, it is not clearly specified how this agreement is relevant or integrated to this particular program. The same applies to the Kaunas agreement on international cooperation.

##### **Conclusion**

Yes, the discipline community participates actively in relevant national and international networks and collaborative arrangements/projects.

**4.3.5 For provision with vocational practice/internship arrangements, the discipline community/-ies and the practice supervisors must have relevant experience from the practice field.**

**Evaluation**

Not applicable

**Conclusion**

Not applicable

**4.3.6 Overall conclusion of § 4-3 Discipline community/-ies attached to the provision**

The quality complies with the expected level according to the requirements in the Regulation on NOKUT's supervision.

**Advice on further developments**

It is important that the whole research group is active in journal publications to some degree in order to secure the publication quantity and quality in the future (4.3.3).

The integration and relevance of the different collaboration agreements should be made more explicit (4.3.4).

## **4.4 Support functions and infrastructure**

**3.4.1 The institution must have rooms, library services, administrative and technical services, ICT resources and working conditions for their students that are satisfactory and adapted to the provision as described in the study plan and the number of enrolled students.**

**Evaluation**

The locales are very central in Oslo, comprising about 4000 m<sup>2</sup>, of which about 200m<sup>2</sup> are set aside for the Master program. The space seems adequate for a program of up to 40-50 students. We assume there are other classrooms and facilities available, though not set specifically aside for the Master program.

Library and computer facilities seem adequate – since students are required to have their own laptops, the need for dedicated computer rooms and a physical library will probably decrease over time.

The library resources are relevant, particularly the electronic ones.

Use of the LMS It's Learning is standard in Norway for both secondary and tertiary education.

**Conclusion**

The quality complies with the expected level according to the requirements in the Regulation on NOKUT's supervision.

**Advice on further developments:**

The proposal does not say anything about what kind of software the students are supposed to have on their own computers, nor about standards beyond having a laptop. Given the nature of the school, the program and the students, we assume this to be in order.

## 5 Decision

Norges informasjonsteknologiske høyskole søkte til søknadsfristen 15.3.2011 NOKUT om akkreditering av mastergradstudium i Information Systems (120 sp.). De sakkyndige avga sin vurdering 23.6.2011.

Av vurderingen fremgår det at søknaden tilfredsstillende alle aktuelle krav i NOKUTs forskrift om utdanningskvaliteten i høyere utdanning (tilsynsforskriften), vedtatt av NOKUTs styre 27.1.2011. På dette grunnlag fatter NOKUT følgende vedtak:

Mastergradsstudium i Information Systems ved Norges informasjonstekniske høyskole akkrediteres, jf. Universitets og høyskoleloven § 3-1.

Akkrediteringen er gyldig fra vedtaksdato. NOKUT forventer at Norges informasjonstekniske høyskole fyller de til enhver tid gjeldende krav for akkreditering. I tillegg forventes det at de sakkyndiges merknader og anbefalinger vurderes i det videre arbeidet med utvikling av studiet.

Norges informasjonsteknologiske høyskole må selv søke Kunnskapsdepartementet om rett til å etablere graden, jf. Universitets- og høyskoleloven § 3-2 (1).

## 6 Documentation

Norges informasjonsteknologiske høyskole- søknad om akkreditering- Master of Science Programme in Information Systems. 15/3-2011. Journalsak 11/200.