

Master Information Sciences (IS): The Graduation Research Project

Course name: Master Project Information Sciences

Course code: 400284

Credit points: 30 ECTS

Aim: The Master Project concludes your study in the Information Sciences.

In the master project, you carry out a significant piece of research in a scientifically and methodologically solid fashion, and exercise important practical skills such as planning, collaborating, critical and reflective thinking, presenting, and reporting. The aim of this graduation project is to demonstrate that you have attained the whole range of scientific and professional skills and attitudes necessary at the Master of Science level.

You can carry out your master project IS either on an IS problem at a relevant company or institution outside VUA (also abroad), or in one of our university research teams or projects. The master project is equivalent to six months of work and includes the writing of an MSc Thesis.

For all rules, assessment criteria, contact persons, and many practical tips for your master project, see the separate "Graduation Protocol and Manual for the Master Project IS" in the study guide online, or at: <http://www.cs.vu.nl/~gordijn/QRM/>, the course website on IS Research Methodology, and it is also attached below.

For internships you may also consult the Internship Office (<http://www.few.vu.nl/stagebureau>).

(Last updated: 17 Sep 2006)

Graduation Protocol and Manual for the Master Project IS

Your Master Project Information Sciences (course code 400284) encompasses 30 cp, in other words, it is worth six months of work, and it finalizes the IS study at VU that brings you the MSc title. Evidently, it is of central importance to your study. Hence, there is a standard protocol with rules and guidelines how to carry out your IS Master research project, which you'll find below. You can carry out your Master Project IS either on an IS problem at a relevant company or institution outside VUA (also abroad), or in one of our university research teams or projects. Before you start your Master project, you have to consult a senior IS scientific staff member. Appointments can be made via Ms. Elly Lammers (e.lammers@few.vu.nl, room T3.06c, phone: +31 (0) 20 59 87718).

The Basic Principles

The graduation phase in the Master IS has two components: a graduation project and a related MSc thesis. The graduation phase is a very important part of the study. It is not only a sizeable part of your total study, but much more: your first job after graduation is commonly related to your graduation project; personal preferences and interests within the main subject of your studies can be exercised and deepened; theories and methods are put into practice; missing knowledge can be completed by literature study; writing a significant piece of well-argued scientific text is practiced; one frequently acquires work experience and on-the-job training; and a network of contacts is built that is very useful also later on.

This protocol points out what rules and criteria your graduation trajectory has to satisfy, and it gives guidelines for how to tackle them. Violating these rules without advance authorization

from the Examination Board may run the risk of your failing this key component of your Master study.

A main point for the graduation project (or 'stage' in Dutch) is that it can be very practical in solving real-life problems in IS, but it has to also have a scientific character and level. This implies that there always has to be a proper problem statement, research question and research design for your study. The problem statement must be as concrete as possible, so that it is feasible to (a) get results within half a year, and (b) write a thesis based on your work. It's not strictly required, but we prefer that you write your thesis in English (rather than in Dutch or any other strange language): a thesis in English helps you reach a broader audience, it is a good experience because IS is a highly international and even global area and industry, and it helps you to learn prepare and publish professional and scientific papers. The subject of your graduation project is determined by the availability of 'job openings' for graduating students, by your own interests, and of course by current research topics: research costs money, so graduation projects are usually directly related to running projects at your hosting institute or company. The range of possible graduation projects is very broad. You can do your Master project internally at the VU, externally at a company, at another university, or even abroad.

Internal Graduation Project

First, it is of course possible to do your Master project internally at the VU. Always many interesting research projects are running that you may find suitable. The advantage is that within the VU your MSc research setting is usually quite clear; something that may be a bit more complicated in an external project. Apart from that, the only practical difference with external projects is that there is no external supervisor.

External Graduation Project

Upon searching for an external graduation project, you should seek to balance three different viewpoints and interests. First, your own personal interest of doing a good, interesting and fun Master project. Second, the interest of the VU, represented by your graduation supervisor, who grants you an academic Master degree and therefore is responsible to safeguard the scientific relevance and level of your work. Third, the company or the institution, which invests time and effort in you (and possibly offers a financial compensation), and understandably wants something in return for that investment. That's why an agreed research proposal is needed at an early stage: it expresses this balance of interests. Even when you mostly work at an external institution or company, and the company supervisor has most daily influence on your work, the supervisor from the VU is ultimately responsible for assessing, quality controlling and grading your MSc work.

Graduation Project Abroad

Finally, there is the possibility to do a graduation project abroad. Such a project requires more preparation time with regard to making agreements concerning the internal and external supervision and the finalization of the project. More information on graduation projects abroad can be obtained from the various IS staff members (listed in the Master study guide) that through their research all have their own contacts and collaborations with universities and companies abroad.

The Phases

From day one until completion, your graduation project goes through the following phases:

- the preparation of the graduation project;
- the implementation of the graduation project;

- the reporting (orally and in writing);
- the presentation and defense.

Preparation

Step A: orientation on the topic & searching a place for the graduation project. A graduation project starts with a period of orientation on the topic. It is advisable to start your orientation activities at least several months before you want to actually start with the graduation project. The topic must fit within the research field of IS (Information Sciences). In this stage, try to more clearly understand and specify in which area your personal interests lie, possibly with the help of conversations with staff members or study colleagues. To get an impression of the various research possibilities, it is recommended to read graduation project proposals and theses, search for scientific literature on the topic, and talk to your study advisors and colleague students. Also the graduation office ('stagebureau' in Dutch, see www.few.vu.nl/stagebureau/, room R4.51) can be of assistance. Note that finding a graduation topic requires communication. You can have a certain degree of influence on the topic yourself, but do not overestimate your capability to shape the research entirely by yourself. It is a give-and-take game: people and companies that offer graduation projects have their own research areas, you yourself have interests and skills, and an intensive negotiation can lead to a concrete research set-up. If one gives total freedom to you, this is usually even a bad sign: there probably is no direct interest in and impact of your contributions. It is much better to participate in an environment where there is a good balance of interests. Also, don't get used by a company as just a programmer or by a scientific institute as a low-level test person to do all the boring and dirty work (but: some dirty work comes naturally, and this is part of any real job, even at universities. If you shy away from that, you are lazy). At the other extreme, it is not the intention that you carry out work or business processes that are on the mission-critical path (if so, it only indicates that such an organization has not organized itself well, so why go there in the first place). You are after all a trainee. Your key interest is to write a good and relevant MSc thesis.

Step B: specify the problem statement of your research. Once you have a clear idea in your mind, and an organization or company that is ready and willing to host your work, it is time to search for a graduation supervisor. Contact the staff member you think is most appropriate to your MSc graduation subject. If you're wrong, or if s/he cannot set aside the time required for the supervision task, you will be referred to another suitable staff member. Together with the graduation supervisor and the company you must come to a problem statement and research approach that is acceptable for all parties. It must be described in writing and signed by the three parties involved. The graduation supervisor always has the last word, in case of (real) disagreements. If s/he agrees, and all other conditions are met, you can start. The problem statement must be concise and focused: that means a maximum of 2 or 3 pages A4. It is advisable to formalize several issues in a contract. Many companies have standard procedures for trainees, with little or no flexibility to deviate from the procedure. You are entirely free in negotiating for a financial compensation, travel expenses etc. Note that you won't be a usual employee. In your contract it must be clearly stated that you are only working for that company for the duration of the task (generally 4-6 months); it must also be clear that you are, in principle, working in the context of getting your MSc degree and not 'just' for the company. Usually there is no problem in this regard, but you are the key person to resolve any possible tensions between academic duties and real-life practice. Thus, it's in your own interest to guarantee your scientific independence and integrity in your graduation project. According to the VU's examination regulations you may start with your graduation project only once you have finished all other classes/subjects successfully. To deviate from this rule, you must appeal

to the Examination Board. Practice is slightly more liberal, but *do* always consult your graduation supervisor in these matters.

Implementation

Within four weeks after commencement, a definite plan of action with planning (deadlines) must be established. This plan will be 1-2 A4 pages long. If it's longer, you're likely to lose focus. If it's shorter, probably it's not useful enough. Furthermore, at least once every three weeks you need to have contact with your graduation supervisor if you do your MSc work externally (at least once a week if you do it internally). You yourself must take the initiative here. In assessing your work, the supervisor considers the process as well. A lack of communication will therefore have adverse consequences on the final assessment and grading. There are several rules concerning writing your thesis. It is the rule that also the thesis is supposed to be written *within* the six months available for the Master project. Sometimes it means that you work for four months and afterwards write for two months; sometimes you write each day what you do, and this writing gradually grows into becoming a thesis; frequently it's somewhere inbetween. It strongly depends on the type of activities that you perform. Discuss this issue in advance with the involved parties, and reach an agreement on it. We at VU recommend starting early: certain chapters of your thesis can always be written at an early stage. This clarifies your thoughts while still conducting your research, and at the same time reduces the hurry and stress of finishing your work in time at the end. Your graduation project must be concluded with a presentation of what you have achieved. The presentation counts as a part of your final assessment (grade). It may be given at the external company (and in practice often is, because that's where your results are going to be used), but it's recommended that the university supervisor(s) is/are present at your presentation.

Reporting

Once your research has been conducted and the results have been processed, the focus is on writing the final version of the Master's thesis. This is not just the finalization of your Master research study, but it's also the culmination of your entire Master study. This thesis must be written individually and is assessed in terms of your individual achievements. The length of a thesis may vary, but lies (for IS) on average around 50-75 pages. However, it's not the length, but achieved results, impact, and quality (i.e. supporting argument) that really counts.

The Assessment

The most important basis for assessment is your written thesis. It is assessed, first of all, by your graduation supervisor at the university. The contents, the way of writing and the professional skills influence the final grade. Your supervisor at the company has a (strong, by the way) advisory role in this. To guarantee objectivity, your graduation supervisor will call in a so-called 'second reader', i.e. another member of the VU scientific staff who independently advises regarding your final grade. This second reader exclusively assesses the written thesis. For this reason, it is important that the thesis itself gives adequate information on all relevant aspects of your Master research work. Therefore, it's not only the results that count; you must also describe the problem statement, research questions and design, a justification of the chosen methodology (in other words, how you get from problem to solution), and motivations for specific choices and decisions made during your research.

A good thesis will contain at least (excluding obvious things such as table of contents, literature references etc.):

- A problem statement (what is the problem to tackle, including positioning the problem statement in its societal or scientific context).

- An objective (what part of the problem statement is solved in the research).
- A description of your approach to reach the stated goal (methodology).
- The results reached; what you have done (and why) etc. This is the actual contents of your thesis.
- Conclusions: what's the upshot of the work you've done?
- The thesis will be assessed by a combination of the following aspects:
- Contents of the work: both the achieved results and the scientific quality of the approach you have used to reach those results. The description of your approach is important, and mainly determines the scientific level. For example, give an overview of the used (scientific and professional) literature and research methods, and the way you have applied them to obtain your results.
- Your report: how does your oral and written work appear in terms of clarity of message, structure, and presentation?
- Your skills and attitudes. Can you plan and work systematically? Can you work independently? How do you cooperate with others?

Assessment criteria

Accordingly, the following quantitative criteria are used by the supervisors for determining the final grade:

1. Contents 50%, of which
 - Results 25%
 - Methodology 25%
2. Reporting 30%, of which
 - Written report 20%
 - Oral presentation 10%
3. Professional attitude and skills 20%, of which
 - Independence in carrying out your work 5%
 - Capability to work with team colleagues 5%
 - Commitment, work drive, persistence 5%
 - Systematic approach and planning 5%

The weighted result of all this is a final grade for your 30 cp graduation project. In this sense, it is considered as 'just' a course (however quite a big one), with the usual possibilities and rules for appeal. See for this (as well as for a short enumeration of the applicable important rules) the VU document 'Rules and directives regarding the procedures in place concerning exams', particularly sections 6 and 9. It is available at the Education Office (Onderwijsbureau). With this grade (if it is a pass, of course) you can formally apply to have granted your MSc degree. To this end, you must go to the Education Office, where you fill in the appropriate application forms. Pay attention in advance to the scheduled dates of graduation and to the deadlines for them. They are indicated in the study guide, on the Web, or simply ask the Education Office staff.

Summary of checkpoints

- Think about a good topic of (your) interest.
- Search for a suitable company or research group.
- Search for a graduation supervisor in the chosen area.
- Did you already successfully finish your other classes/subjects?
- Get research proposal approved by graduation supervisor, yourself (yes!) and (if applicable) company.

- Start graduation project (now it's your responsibility - *just DO it*).
- Within a few weeks: establish detailed action plan for your research.
- If at company, minimally three-weekly in-depth discussions with graduation supervisor at the university (and in-company supervisor minimally once a week).
- If research carried out at university group, minimally once a week.
- Write thesis, with regular feedback of graduation supervisor (and invite feedback from others as well, including company supervisors and relevant specialists).
- Present results orally (at university or company, wherever impact is highest).
- Hand-in final version of thesis (cover etc. may be done through Education Office).
- Apply for graduation at Education Office (and do this in time, so that all necessary formal administrative arrangements can have their official course).
- Graduation ceremony (be there in time, invite friends and relatives, and have fun).

For further information

This IS graduation protocol and manual contains all relevant rules. More information may be available:

- Via the FEW graduation project office: its homepage at www.few.vu.nl/stagebureau/ is a rich source of information, ranging from offers for graduation projects to tips, manuals, example job application letters, etcetera.
- Via your study advisor.
- Via the posted VUA's education and examination regulations.

The primary contact person for IS graduation projects are senior scientific IS staff members, with whom you can make an appointment via Ms. Elly Lammers (e.lammers@few.vu.nl), room T3.06c, phone: +31 (0) 20 59 87718). Make sure, however, that you comply with what is described in this manual.