GUIDE FOR HOST ORGANIZATIONS

MASTER PROJECT BUSINESS ANALYTICS
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1 Introduction

This document serves as a guide for companies wishing to offer an internship to students of the Vrije Universiteit Amsterdam for the Master Project Business Analytics (BA).

The Master Project Business Analytics differs from all other parts of the study program in that the student is required to spend a period actually doing an academic research within an external (private sector) organization, usually doing so on a full-time basis. The student will work on a predefined projects and is required to create the required products within the stated period.

The student works on behalf of the host organization. The internship is intended to result in a product which is of practical value to that organization, and of scientific value for the university. The assessment of the internship therefore relies on input from the external supervisor as well. However, the supervisor of the Vrije Universiteit Amsterdam has the final responsibility of the Master Project.

The end product of the Master Project Business Analytics is the 'internship report' which is also the student's graduation thesis.

Benefits of an internship for the host organization are:
- Bringing in academic knowledge to analyze and (give an impulse to) solve a business problem.
- The intern is aware of current developments in the relevant field; an intern can do research where employees don’t have time for.
- The intern provides new insights at the company, department and also a potential problem.
- The intern might be a potential employee.

The personal pronoun ‘he’ as used in this Course Manual should be read as ‘he or she’.
2 The internship within the master program Business Analytics

2.1 Objectives

The Master Project Business Analytics is the graduation project for the master’s program Business Analytics or the dual master’s program Business Analytics. As the graduation project this course builds on and integrates previous courses on Business Analytics. The student shows that he is capable of independent research at an academic level (typically applied in a practical context) on a specific topic in the field of Business Analytics under supervision of one of the staff members of the Faculty of Science. Furthermore, the student writes an academic report to present the applied scientific methods and the obtained results. Also, the student gives an oral presentation that is tailored to the audience. As such, the skills described below should be demonstrated during the Master Project Business Analytics.

Academic (research) skills:

- The student formulates a research question.
- The student studies relevant literature.
- The student either develops or selects algorithms to generate an accurate model based on data related to the problem or develops a (mathematical) model of the problem.
- The student analyzes the model using skills and techniques acquired during the master’s program Business Analytics, and shows that he is able to connect theories, models, and concepts with and within the research topic.
- The student answers the research question using analytical and numerical methods.
- The student is capable of independent and critical reflection on his/her own and on other relevant work.
- The student is able to write a report that clearly describes the research question, the motivation for this research, the relevant literature, the used methodology, the results, conclusions and recommendations.
- The student is able to give a clear presentation about the research question, the motivation for this research, the used methodology, the results, conclusions and recommendations.
- The student is able to collect data for validating and / or fitting the model, and implement and verify computer programs.

Field of work:

- The student takes responsibility for his/her own actions.
- The student shows that he is capable of making well-founded decisions and can support these choices.
- The student shows an appropriate work attitude during the master project, e.g. independence, initiative, enthusiasm, punctuality.
- The student produces the required products and/or reports according the schedule.
- The student gains an understanding of the way in which the organization functions.
- The student practices and displays social and communication skills.
- The student explores potential career options.
- The student maintains and strengthens contacts between the Vrije Universiteit Amsterdam and the host organization.
2.2 Requirements

The internship must meet the following requirements:

- It must be of demonstrable added value to the host organization. This requirement relates to the significance of the internship project. However, this significance should not be so great that the business processes are dependent on the successful completion of the project. In other words, the project must not be 'on the critical path'.
- The internship must be appropriate to the program as a whole. The project should have a clear relationship with one or more of the individual subject courses within the program.
- The project must be of scientific state of the art and must represent clear educational value.
- The student is required to spend at least six months (on a full-time basis) actually doing research within the host organization.
- The student must be able to learn and develop by virtue of the internship project.
- The internship project must be fully formulated and its purpose defined beforehand (=Internship Proposal). More information and a template of the Internship proposal is to be found on Canvas. Accordingly, there must be a full description of the required end product. In some cases, the activities required to achieve this end product will also be described. However, in most cases only a general description of the project is available beforehand. During the first weeks of the internship, the student need therefore to work on defining its exact content (=Action Plan). After two and a half months the student will discuss the go/no go decision with the VU supervisor. The VU supervisor will note the decision on the Action Plan and the student will forward this Action Plan to the internship coordinator to archive. More information and a template of the Action Plan is available in chapter 3 and on Canvas.
- Supervision must be structured, with supervisors appointed by both the host organization (the 'external supervisor') and the Faculty of Science (the 'graduation supervisor' and 'second reader'). They are jointly responsible for providing appropriate coaching and supervision. Students of Business Analytics also receive advice and guidance from the Internship Board, which will appoint supervisors to provide personal supervision. Coaching and supervision by a postgraduate researcher is also possible, whereupon that researcher's supervisor is still responsible in the end. Such arrangements require consultation with the internship coordinator.

2.3 Timing within the program

The internship is undertaken during the final (graduation) semester. A prerequisite is that all program components which culminate in a formal examination must have been successfully completed. So before starting an internship (=graduation project), the student must have earned all other program credits. If only one component of the master's program is still outstanding, the graduation supervisor may, at his discretion, permit the student to commence the internship. So a shortfall of 6 credits is permissible, as long as it does not include credits for the Business Analytics Research Paper.

Where more than one program component has yet to be completed, permission from the Examination Board is required. The request must be submitted in writing via VUnet.
3 Products

The internship results in a number of products:

3.1 Internship Proposal

Prior to the commencement of the internship, the project will often be formulated only in general terms. It is important that the project is nevertheless described in writing, that the problem on which the student is to work is clearly stated and defined, and that the required products ('deliverables') are identified.

3.2 Internship contract

In most cases, the host organization will require the student to enter into a formal agreement (contract) prior to the start of the internship. Signing a contract with the host company is dependent on approval of the internship proposal. That means, the student does not sign before it is clear that the internship proposal is approved. This formal agreement will cover the following matters:

**General:**
- Name of host organization and nature of the internship project.
- The period of the internship and the number of days per week on which the student's attendance is required.
- Student's name and that of the external supervisor.

In many cases, the following matters are also included:
- The applicable terms and conditions, including insurance cover (requirements and eligibility).
- Rules to be observed in the interests of order, health and safety.
- Rules to be observed with regard to confidential information.
- Circumstances under which the agreement may be terminated.
- Students are advised to read the agreement very carefully before signing it, and contact the HRM department of the host company should they have any questions.

3.3 Action plan

The Action Plan must be produced within four weeks of commencing the internship. It provides a full description of the internship project, to include:

- The problem which the student will address.
- The required product(s).
- A schedule of the activities to be undertaken. (It is advisable to arrange activities by week number).

The Action Plan must be approved by the first supervisor (=graduation supervisor), second reader and the host organization. The internship coordinator will then be notified accordingly and will archive the Action Plan for the Examination Board.

3.4 Go/no-go decision

After two and a half month there is a go/no-go decision. It is important to decide at this point in time if there is a good chance the student will succeed to finish his master project with an adequate grade. It is
the responsibility of the student to make an appointment with the first supervisor to discuss the progress of the project, so that the supervisor can make the go/no-go decision.

3.5 End product

The 'end product' might be the results of a study, a computer program, computer documentation, etc.

3.6 Internship report

The internship report, which is also the student's formal thesis / graduation project, is a written report of all relevant aspects, including the end product and the manner in which it was produced. Usually the report is written in English, except if the host company strongly prefers to have the report written in Dutch. If the report is confidential, students will be asked to produce two reports, one of which is the complete internship report including confidential information, while the other is an abridged version which contains only that information which can be made generally accessible, for instance on the [website of the Internship Office](#).

3.7 Final presentation

The internship will conclude with a formal presentation, usually at the host organization's premises. In exceptional circumstances it may be held at the Vrije Universiteit Amsterdam. The final presentation is mandatory for students of Business Analytics.

“The student must submit the graduation project and must give the presentation no later than the day of the internship. In exceptional circumstances and after consultation with all parties involved, the student may submit the report within two months of completion of the internship. If the student fails to meet this deadline, the graduation project will be incomplete and the student will not receive the associated credits. In exceptional circumstances, the Examination Board may deviate from the provisions above on the basis of a request submitted by the student with supporting arguments.” ([Teaching and Examination Regulations 2017-2018](#) on VUnet)

If the student thinks there will be a delay in his master project by circumstances beyond his fault, he has to contact the extern supervisor and both VU supervisors as soon as possible to limit his delay. If all supervisors agree, it is possible to postpone the finishing date of the master project. The intern can ask a postponement for at most two months to finish his master project. If so, please notify the internship coordinator as soon as possible. Within those two months the student must have an adequate grade (6 to 10), otherwise the internship will be counted as not accomplished.
4 Supervising and coaching

Various people are involved in the overall process, from finding the internship position, through the internship itself, to the assessment of the end results:

4.1 The external supervisor

During the internship the external supervisor (a manager or other member of staff within the host organization) is the student's first point of contact. He is responsible for direct supervision and coaching, and will therefore hold regular progress meetings with the student. He ensures that the student has access to all resources required to complete the internship project, to include a physical workspace with the necessary facilities, and will provide a general introduction (induction) to the organization. The external supervisor will also ensure that the student has access to all necessary information.

4.2 The graduation supervisor / first supervisor / VU supervisor

A member of the academic staff (usually from the department of Mathematics or Computer Science, but in exceptional circumstances from another department or even another faculty) will supervise the student on behalf of the Vrije Universiteit Amsterdam. Throughout the internship, the graduation supervisor will maintain regular contact with the student, the second reader and with the external supervisor. Meetings can take place at the host organization's premises or at the university. The graduation supervisor bears overall responsibility for maintaining the academic level of the internship.

4.3 Second reader

The second reader is jointly responsible for maintaining the level of the internship. He will help to assess the Action Plan and acts as the second reader (hence the name) of the internship report.

4.4 Internship coordinator

The internship coordinator's tasks are:

Prior to the internship:
- To identify organizations willing to offer internship positions.
- To inform students about internship opportunities.
- To advise and assist students who are seeking an internship.
- To advise and supervise students with regard to organizational aspects (including study progress, finding a graduation supervisor).

During the internship:
- To advise on organizational aspects.

After the internship:
- Documentation.
5 The internship report

The internship report (also the graduation report) is a written report about the research during the internship.

5.1 Content

The report describes the following aspects of the internship:

- The project.
- The academic relevance and background.
- The relationship between the project and the relevant business/decision-making processes.
- The manner in which the project was conducted, including the relationship with the original formulation of the project.
- The end product(s), including any interim results.
- The host organization.
- The supervisors.

5.2 Confidentiality

The host organization may regard some of the information in the internship report as confidential. Nevertheless, the assessment (by the graduation supervisor, external supervisor and second reader) will be based on the full report, including any confidential sections. Any report which contains confidential information should be clearly marked 'Confidential' on the front cover. The student, in consultation with the Internship Office, is to ensure that the confidentiality is respected at all times. Although the Internship Office will receive a copy of the full report, this version will not be made available for general inspection.

In this situation, the student should try to prepare an abridged version of the report which excludes the confidential information as well. This version should nevertheless include the full chapter listing, the description of the internship project, the description of the host organization, and the names of the various supervisors.

The student has to be aware that he has to upload a digital copy of the internship report (=thesis) to the VU Library Online Thesis Database to get his diploma. “It is important to read the information first also what to do when the thesis may not be published in full online, please see Upload your thesis FAQs. No uploaded thesis means no diploma.” (VUnet, https://vunet.login.vu.nl/services/pages/categorydetail.aspx?cid=tcm:165-592203-16&category=tcm:165-761689-1024&context=student%24VU%24242800%24M%24XM_BA, 2 March 2018)

The student has to make sure that he also treat a confidential research and a confidential report confidentially!
6 Assessment

6.1 Procedure

The internship and its products will be assessed by the graduation supervisor, in consultation with the second reader and the external supervisor. The graduation supervisor is responsible for the final assessment of the internship. He acts for and on behalf of the Examination Board. The overall assessment will take into account the input of the external supervisor and the second reader. The findings will be discussed with the student.

Furthermore, the external supervisor of the host company will be asked to fill out an evaluation form by the first supervisor. This form can be mailed to the internship coordinator (h.j.m.van.goor-balk@vu.nl).

Any problems or queries with regard to the assessment will be referred to the Examination Board.

The assessment is based on the following components:

- The process (the manner in which the internship project is undertaken)
- The written report
- The oral presentation

6.2 The process: performance of the internship project

Here, the assessment takes into account:

- The complexity of the project.
- The quality of the resulting product(s).
- The manner of working (independence, initiative, enthusiasm, punctuality, consistency, creativity).
- Adherence to the schedule (has the student produced the required products and/or reports on time?).
- Attitude and general conduct (has the student observed the house rules of the host organization, and has contact with management and colleagues been satisfactory?).

6.3 The written report

The assessment is based on the full written report of the internship project, to include any confidential sections.

The assessment criteria are:

- The manner in which the specific business problem has been addressed in relation to the theoretical knowledge gained during the program.
- The general requirements applying to any academic document, whereby findings must be objective and reproducible, and all choices must be properly substantiated.
- The structure of the report: problem formulation and analysis, the methodology applied, definitions and delineation, ‘readability’ in relation to the intended readership, formulation of conclusions and recommendations.
- Personal input by the author: constructive attitude, empathy, initiative, creativity).
- Communicative aspects (correct use of language, presentation).
- Technical aspects (layout, presentation, style and correct use of language).
6.4 The oral presentation

The oral presentation also forms part of the overall assessment and will be at the company.

The assessment criteria are:

- Demonstrable knowledge of the topic.
- A clear description of the essentials.
- Ability to answer questions.
- Presentation skills, including the use of audiovisual aids such as the beamer.
7 Insurances

7.1 Liability insurance (for all interns)

During the internship the student wants to learn and practice his knowledge and skills. It can happen the student damage something unintended during the internship. If the student is an intern, the student is usually included in the company's liability insurance. To be certain, the student has to check with the host company whether he is indeed covered. If not, it is wise for the student to arrange his own liability insurance as soon as possible. It is always a good idea to have a liability insurance.

7.2 Health insurance (important for international interns)

From the moment the student start an paid internship, the student will have to take out basic healthcare insurance, even the student is covered by another health insurance provider. As soon as the student finishes his internship, he has to go back to his former health insurance. The information about the health insurance on the websites below can be more up to date than the information in this document. Make sure you check the information online, for example:

- https://www.studyinholland.nl/practical-matters/insurance/healthcare-insurance/healthcare-insurance
- https://www.zorgverzekeringslijn.nl/english/

7.3 Nuffic agreement (important for international students)

For non EU students: the student makes all the arrangements with the company regarding the Nuffic agreement. The company must keep the Nuffic agreement according the Nuffic website: "De werkgever hoeft geen tewerkstellingsvergunning (TWV) aan te vragen, maar moet wel een stageovereenkomst kunnen tonen als de Inspectie SZW hierom vraagt. Een kopie van de stageovereenkomst (en van het paspoort van de stagiair) moeten aanwezig zijn op de werkplek." Source: https://www.nuffic.nl/hoger-onderwijs/toelating-en-verblijf/stage/stage-nederlandse-opleiding/?searchterm=stage.

According the Nuffic agreement: "A copy of this agreement must be held by the administrative office of both the Dutch educational institution and the internship employer" Source: https://www.nuffic.nl/en/files/documents/standard-internship-agreement-for-non-eu-eea-students-as-defined-in-article-1f-of-the-foreign-nationals-employment-act-implementation-decree-buwav.pdf. To be certain, the student has to send the Nuffic agreement also to the internship coordinator to archive the agreement in your dossier.

The information about the Nuffic agreement on the website of Nuffic can be more up to date than the information in this document. Therefore, be sure to check the information on the Nuffic website as well.
8 In case of trouble

In case of any problems concerning the internship the external supervisor can contact the graduation supervisor of the Vrije Universiteit Amsterdam and / or with the internship coordinator of the department of Mathematics and Computer Science: Annemieke van Goor (h.j.m.van.goor-balk@vu.nl) of 020 598 7496).
Appendix 1:

Assessment form external supervisor master internship Business Analytics
(to be completed by the external supervisor of the internship organization)

<table>
<thead>
<tr>
<th>Data intern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name student:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data internship organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name organization:</td>
</tr>
<tr>
<td>Name external supervisor:</td>
</tr>
<tr>
<td>Date assessment:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Internship Assessment¹</th>
<th>O</th>
<th>T</th>
<th>V</th>
<th>G</th>
<th>Z</th>
</tr>
</thead>
</table>

1. The process: performance of the internship project

- the complexity of the project
- the manner of working (independence, initiative, enthusiasm, punctuality, consistency, creativity)
- adherence to the schedule (has the student produced the required products and/or reports on time?)
- attitude and general conduct (has the student observed the house rules of the host organization, and has contact with management and colleagues been satisfactory?)
- insight into the organization
- the quality of the resulting product(s)

Overall assessment of process
## 2. The written report

- quality of analyses, conclusions and argumentation
- structure (introduction, main body, conclusion)
- technical aspects (layout, presentation, style and correct use of language)

**Overall assessment of the written report**

## 3. Presentation

- grasp of subject matter
- explanation of essentials
- response to questions
- of AV aids (overhead projector, beamer, etc.)

**Overall assessment of the presentation**

## 4. Summary final judgment about the stage

**Final judgment**

<table>
<thead>
<tr>
<th>O</th>
<th>T</th>
<th>V</th>
<th>G</th>
<th>Z</th>
</tr>
</thead>
</table>

1 O = inadequate; T = borderline; V = adequate; G = good; Z = Extremely good

**Overall impression and any comments concerning the intern / internship**
Did you discussed the contents of this form with the intern?  
| yes | no |

Evaluation of the master Business Analytics

Do you have suggestions - based on your experiences - regarding:

Information and guidance from the master:

The curriculum of the master:

If knowledge of the trainee was not complete, can you indicate which subjects the student have too little knowledge?

How do you in general assess the connection between the master Business Analytics and the labor market?

Comments

This assessment form can be mailed / sent to the VU supervisor and eventual also to the internship coordinator Mathematics and Computer Annemieke van Goor: h.j.m.van.goor-balk@vu.nl.

Thank you for your cooperation