

COURSE MANUAL
DUAL MASTER BUSINESS ANALYTICS

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1 Introduction

This handbook is provided for informational purposes and is primarily intended for students and prospective students. It offers a guide for the work period which forms part of the Business Analytics dual master program.

The dual master program is two years in duration. During the first sixteen months, students are required to divide their time equally between work and study. The final six months is devoted to the graduation project. The dual master is therefore very similar to a traditional 'sandwich course' in which study and work are fully integrated. You are an employee and a student at the same time. You are on the payroll of the host organization (for which you will conduct work which is of direct relevance to your study program), and you will also attend lectures, take examinations, etc. The Vrije Universiteit Amsterdam has established contacts with many large companies in order to realize this particular combination of learning and work experience. These companies acknowledge the importance of 'on-the-job' learning and the need to acquire an adequate theoretical grounding. Moreover, they are all large enough to offer good development opportunities, whereby students starting the dual master program will be required to undertake less 'heavy' work than those in the latter stages. Should you decide to join the host organization after graduation (if indeed you are invited to do so), you will be thoroughly familiar with the organization and what it does. Remember that this works both ways: the organization will also know you very well!

Because many of the individual subject courses are assessed on the basis of practical work, it is possible to complete the dual variant program within 2 years, to include the graduation project (which is a mandatory component of the Business Analytics program).

Admission to the dual master program is granted to those who have a Business Analytics Bachelor degree. For those with another university Bachelor degree, such as Mathematics, Econometrics, Computer Science, or a Bachelor degree from an institute of higher education, admission may be granted on an individual basis. Those seeking admission to the dual master program should realize that admission also depends on obtaining suitable employment. The Vrije Universiteit Amsterdam has contacts with a number of companies that are interested in participating in this program.

For more information concerning the dual master program, contact the [internship coordinator](#) or the [master coordinator](#).

2 The difference between a dual work period and an internship

There are clear differences between the work period undertaken as part of the Business Analytics dual master program and the Business Analytics master project internship.

- In most cases with the dual master program, you are employed by the host company on a fixed-term contract and are therefore officially on that company's payroll. The internship student rarely has the same status.
- Your working activities will be more closely involved with the host organization's primary business processes. An intern will usually be required to undertake an assignment which will (or may be) of importance to the organization only at a later date.
- You will often be required to work with others in a team setting, whereby it may not be possible to identify clearly your own contribution or the products for which you are (individually) responsible. The intern usually works alone.
- Your dual work period is of fixed duration, whereas the internship can sometimes be extended if more time is required to complete the assignment (for at most with two months).
- The assessment of the dual master work period takes specific and significant account of your performance at the company, whereas the assessment of an internship relies more on the final report.

3 Content of the Business Analytics dual master program

Students can choose between the three tracks of the Business Analytics dual master program:

- Optimization of Business Processes
- Risk Management
- Computational Intelligence

The logical approach would be to select a track with a combination of subject courses which are particularly relevant to your work and/or career plans.

The Business Analytics program strives to achieve an appropriate balance between subjects which are regarded as absolutely essential to good professional performance, and those which reflect the most recent developments in business practice. New courses are regularly added to the curriculum while existing courses may be updated.

The dual master program combines work and study. During this program the student is employed part time, and studies part time. The work has to be relevant for the study and the dual work period is accordingly granted 12 EC. Often, the external master project is carried out at the same organization as the dual work period. So, the Master Project internship (36 EC) could be directly related to the work itself. This makes the total of work related credit points 48 EC. The Master Project internship will be undertaken during the final phase of the overall master program, and will culminate in the production of a report. The students can only start their Master Project (= internship) after having finished the compulsory Research Seminar Business Analytics (6 EC) and having completed all but possibly one program component.

A minimum of 72 ECTS must be obtained from the individual subject courses (including the Research Seminar). The total value of the dual master's Business Analytics program is therefore 120 EC.

Note 1: Every program, including the choice of optional courses, has to be discussed and agreed upon with the master coordinator and approved by the Examination Board. And every dual work placement needs to be approved by Elenna Dugundji and the [Internship Board Business Analytics](#).

Note 2: See also the [Study Guide](#) online

4 Admission

If you wish to apply to join the dual master program, the university will assess your prior qualifications and experience to determine whether there are any gaps in your knowledge.

Holders of a bachelor degree in Business Analytics are automatically eligible for admission to the master program. This can be either the 'standard' degree or the dual master. Applications from those with a bachelor degree in a subject other than Business Analytics (e.g. Mathematics, Computer Science, Econometrics), and holders of a higher education diploma (Dutch HBO or equivalent) will be considered on a case-by-case basis.

Applicants may be required to complete a pre-master course to resolve any gaps in their existing knowledge. The greater the distance between the applicant's prior education and the Business Analytics profile, the more likely such gaps will be. In all such cases, consultation with the [master coordinator](#) is essential. The university attempts to permit as many students as possible to complete the dual master degree, provided the quality of the program is maintained at all times.

5 Application

If you are able to meet all the requirements for admission (see the study guide) and would like to enroll in the dual master program, you should contact the relevant [coordinator](#). Having done so, you can begin to look for a suitable host organization. In consultation with the dual coordinator, you will apply to one or more companies. Of course, you can state your preference for a certain company. Wherever possible, you will also be allowed to select the type of work you are to undertake.

It is up to the host organization (partner company) to decide whether you are a suitable employee, whether you will be able to achieve the desired career development, etc. In other words, the host organization must determine whether you will be a good fit for the company. You will therefore be required to go through the regular application procedure just like any other prospective employee. If successful, you will join the payroll of the organization and will receive a regular salary. You will have a job description and you will be subject to the usual performance appraisals, etc.

The coordinator of the Business Analytics dual master program will assess the suitability of any position offered. The formal approval of Elenna Dugundji and the Internship Board Business Analytics is also required before you can actually take up employment (see also Dual master program work proposal on Canvas or on the [website of the Internship Office](#)). The Vrije Universiteit Amsterdam will attempt to ensure that the work experience you will gain, adequately reflects all aspects of the academic program, i.e. mathematics, business and computer science.

Direct supervision of your day-to-day activities is provided by the host organization. However, the university is also closely involved in that the quality of your academic work will also be subject to regular assessment. There will be frequent contact and consultation between yourself, the university and the host organization throughout the program.

6 The employment contract, insurance and abroad

Contract and insurance

You will enter into a standard fixed-term contract of employment with the host organization. You will be an official employee of that organization and will receive a regular salary. The contract is signed between the employer (the host organization) and the employee (yourself).

If you have any questions concerning the provisions of the contract, you should contact the host organization's personnel (HRM) department or optionally the dual master program coordinator.

Certain types of insurance coverage may be required, depending on the exact nature of the work you are to perform. This is either the responsibility of the employer or of the employee (yourself). The host organization's personnel (HRM) department will be able to advise you.

Remember that you will also require health insurance. It may be possible to obtain this through the employer under a collective policy. It is wise to have liability insurance.

See also the Canvas page for important links about insurances.

Abroad

If you go abroad for your dual work during your dual work period, [VUnet registration](#) of a stay abroad is mandatory! This is to know which students are staying abroad and to help where possible if a certain crisis situation arises, such as during the corona epidemic.

Please, check the information below on Vunet:

- <https://vunet.login.vu.nl/services/pages/practicalinformation.aspx?cid=tcm%3a164-422401-16>
- <https://vunet.login.vu.nl/Pages/SelfServices/InternationalServices/Overview.aspx>

7 Coaching and supervision

You will study and work at the same time. Coaching and supervision in the workplace will be provided by the host organization itself, just as for any other employee.

During the work period, you will work under the direct supervision of a member of the host organization's staff (the 'external supervisor'). The coordinator of the Business Analytics dual master program acts as the 'internal supervisor' (for the Vrije Universiteit Amsterdam). The internal supervisor will maintain regular contact with both the external supervisor and yourself during the work period. In principle, this contact is concerned only with the progress of the work period, and not with any practical day-to-day matters. You are responsible for preparing for your meetings with both supervisors after six to seven months (agenda, report, recording the agreements made, etc.)

Around the same time, you will provide both supervisors with an interim report of approximately 3-4 pages about your projects, tasks and responsibilities until then, and information about planned projects for the second part of the dual work period. The student will receive feedback on this interim report by Elenna Dugundji, so the student is able to tailor his/her activities to a higher level in consultation with the external supervisor if appropriate.

Your study activities at the Vrije Universiteit Amsterdam will be supervised by the faculty staff. Our university is renowned for the high level of coaching and guidance provided to its students. However, this is only available during the time you are actually studying at the university. The success of the dual 'study and work' formula depends on all parties working together effectively. The university will therefore wish to remain in close contact with the host organization for the work period.

During the final phase of the Business Analytics dual master program, students undertake an 'integrated internship' (= Master Project Business Analytics), during which supervision is more intense. You must demonstrate that you are able to produce results of a high academic quality. While there will, of course, be some supervision from the host organization, you will be able to rely on greater support from the university and a supervisor will be appointed to coach and supervise you. From time to time there will be 'three-way communication' between yourself, the host organization and the Vrije Universiteit Amsterdam.

8 The report

Besides the interim report (see chapter 7) you are required to produce a written report of your activities during the work period, and to give a presentation at the Vrije Universiteit Amsterdam at the end of the dual work period. The report will describe the activities you have undertaken and should clearly demonstrate an understanding of the structure of the organization.

8.1 Contents

The report should describe the following aspects.

- The organizational structure of the company and the department in which you worked.
- The project(s) in which you took part.
- The activities which you conducted.
- The relationship between these activities and the Business Analytics program.

If you are involved in more than one project, each should be described separately briefly, and one should be described in depth.

8.2 Sections and chapters

The report consists of the following sections and chapters:

- Front cover / title page
- Preface
- Table of Contents
- **Part I. Business context**
 - Organization: a description of the host organization, perhaps including its mission statement, a brief account of its history, recent developments, etc. You should also include an organizational chart. Establish the organization's position within its sector or industry (competitors, market share, etc.).
 - Department (as appropriate in a large company): a description of the department in which you worked, its tasks and responsibilities. Describe the position of the department within the organization as a whole (referring to the organizational chart). If relevant, include an organizational chart for the department itself.
- **Part II. Project and activity timeline**
 - A brief description of each project on which you worked. What was the objective and why was it implemented? Describe the product(s) achieved thus far and those yet to be attained, together with a timeline. How are tasks and responsibilities divided among the project team members, and what is their relationship with the tasks of the department as a whole?

- Activities: a description of your own activities and input. What exactly did you do? Your responsibilities? Which products did you (help to) create? Which methodology and methods did you use? Include a timeline.
- **Part III. Mini-tutorial**
 - Mastery: for one project that you worked on, please describe in depth the Business Analytics technique(s) that you used. What kind of technique is it? Why did you use this technique? How does the technique work? What is involved to apply this technique in practice? What kind of alternative techniques could you have used instead? Were there salient reasons that alternative techniques were not chosen? Please motivate major steps in the analytics process. Were decisions taken by you, by the team, by a supervisor, by the department, by the company, by the industry, by the client, ...?
 - The relationship between your work activities and the Business Analytics program: state which subjects were relevant to the work, whether any gaps in your knowledge became apparent, and what new knowledge or experience you gained during the work period.
- Appendices: literature and references, contact information for the organization and external supervisor(s). The organizational chart(s) may be included as an appendix if this helps to make the report itself more accessible.

The above list is provided as a guide rather than as a set of instructions. You may find it appropriate to combine certain sections or to devote more than one chapter to certain aspects. Furthermore make sure the depth and challenges of your activities are well described and clear.

8.3 Confidentiality

The host organization may regard some of the information in your report as confidential. It is your responsibility to ensure that confidentiality is respected at all times. Your report will then address the relevant aspects in as much detail as necessary in order to evaluate your understanding of the organization, your projects and activities, and your mastery of business analytics without divulging information of a confidential nature. Furthermore, if you specifically indicate on the cover/title page that the report is confidential, it will be treated as such.

8.3 Submitting your interim report

You need to submit a digital version of the interim report before 1 May via Canvas. This interim report consists of a brief description of all projects on which you worked, and a description of your own activities and input. For every substantial project that you worked on, please describe the analytics technique(s) that you used in maximum half to one page per project. Furthermore, the student provides information about the planned projects for the second part of the dual work period. Indicate in particular if you see sufficient perspective to be able give a mini-tutorial in your final report with an academic level of analytical depth on one of the projects you have worked on or will work on in the remaining dual work period. Please be sure to give your external supervisor the opportunity to review your report **before**

you submit this report on Canvas. The student will receive feedback on this interim report by one of the staff members, so the student is able to tailor his/her activities to a higher level in consultation with the external supervisor if appropriate. For more information, please see also chapter 7 and paragraph 8.2.

8.4 Submitting your final report and giving your presentation

You have to submit a digital version of the final report within one month of completing your work period in Canvas, and to the external supervisor. Remember that the contents of the report could be made public, unless you specifically indicate confidentiality on the cover/title page. Please be sure to give your external supervisor the opportunity to review your report **before** sending this to VU.

Accompanying your final report, you must also give a presentation about your work period at the university. The presentation has the same general content as your report, but places specific focus and emphasis on the mini-tutorial demonstrating your mastery of a Business Analytics technique, while respecting confidentiality of the company. You should plan your presentation for approximately 20 minutes, with an additional 10 minutes for questions.

You will give your presentation in December or January. If you started on another date than the 1st of September, please contact the dual work coordinator to arrange a presentation date and time. The dual work coordinator will send you an email with information about the presentation two months before completing your work period. One of the staff members – Elenna Dugundji - will also attend your presentation. Preferably several dual students give their presentations in a block of time together on the same day. The other master students of the (dual) Business Analytics program, and students from the bachelor Business Analytics program will be invited to join your presentation. You are also encouraged to invite your company supervisor to attend your presentation. Please let the coordinator of the Business Analytics dual master program know in advance if your company supervisor will join.

9 Assessment

The Business Analytics dual master program coordinator will, in consultation with a Business Analytics staff member, and the external supervisor, give an overall assessment of the work period. This assessment will take into account the level and the manner in which the required activities were performed, the resulting report, the presentation, and the assessment forms (to be completed by the external supervisor before 30 April of the first academic year of the Dual Master and around the end of the course "Dual Workperiod"). The coordinator will also contact your supervisor at the company to discuss the grade. There is no resit opportunity for the course "Dual Workperiod"

10 Useful addresses

Business Analytics Dual Master Coordinator:

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Room 9A-33

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Assistant Professor Business Analytics:

[Elenna Dugundji](#)

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