

Teaching and Examination Regulations

Master programme in Business Analytics Faculty of Science

Academic year 2018-2019

- B1. Format programme specific section - general provisions
- B2. Format programme specific section – content of programme

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Section B1: Programme specific – general provisions

6. General programme information and characteristics

Article 6.1 Study programme information

1.	The programme Business Analytics CROHO number 66856 is offered on a full-time and combined work-study basis.	Advice OLC; approval FGV (7.13 i)
1a	The language of instruction is English.	Advice OLC; approval FGV (9.38 b)
2.	A unit of study comprises 6 EC or a multiple thereof.	

Article 6.2 Teaching formats used and modes of assessment

1	The programme uses the teaching formats as specified in the Study Guide.	Advice OLC; approval FGV (7.13 x)
2.	The modes of assessment used per educational component are specified in the Study Guide.	Advice OLC; approval FGV (7.13 l)

7. Further admission requirements

Article 7.1 Intake date

The programme starts on September 1.	Advice OLC; approval FGV (9.38 b)
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Article 7.2 Admission requirements

<p>1. Admission to the Master's programme is possible for an applicant who has obtained a Bachelor's degree at an institution of academic higher education, which demonstrates the knowledge, understanding and skills corresponding to the exit qualifications of the bachelor programme Business Analytics. This is demonstrated in the following prior education requirements:</p> <p>a. Registration for the Master's programme in Business Analytics is open to anyone who is in possession of a Bachelor's degree in Business Analytics and whose English-language proficiency is at least equivalent to pre-university final-exam level (VWO in the Netherlands).</p> <p>b. An applicant with a university Bachelor's degree in a field other than that specified in paragraph 7.2.1.a may be admitted to the programme by the Examination Board if the following conditions have been met:</p> <ul style="list-style-type: none"> - the applicant's prior education, including any additional coursework, includes at least 90 credits in mathematics, computer science and/or econometrics; - the applicant's prior education, including any additional coursework, includes at least 45 credits in mathematics, including at the very least Probability and Statistics; - the applicant has proven programming experience; - the applicant's prior education meets the qualifications of a university Bachelor's degree programme as defined in the Dublin descriptors; 	Partly legal provision & ordinance CvB, see appendix 3. Admission requirements excepted from participation in WHW
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<p>- the applicant's English-language proficiency is at least equivalent to pre-university final-exam level (VWO in the Netherlands).</p> <p>c. At the admissions stage, the Examination Board may impose additional requirements on an applicant's final Master's degree assessment for the programme in Business Analytics.</p>	
<p>2. The Admission Board will investigate whether the applicant meets the admission requirements.</p>	<p>Legal provision</p>

Article 7.3 English language requirement for English-language Master's programmes

<p>1. The proficiency requirement in English as the language of instruction can be met if no longer than two years before the start of the programme, the applicant has successfully completed one of the following examinations with at least the scores indicated:</p> <ul style="list-style-type: none"> - IELTS: 6.5 - TOEFL paper based test: 580 - TOEFL internet based test: 92 - Cambridge Advanced English: A, B or C. 	<p>Landelijke gedragscode Internationale studenten</p>
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Article 7.4 Pre-Master's programme

<p>1. Students with a Bachelor's degree in a field that corresponds to a sufficient extent with the subject area covered by the Master's programme can request admission to the pre-Master's programme.</p>	<p>advies OLC; instemming FGV (9.38 b)</p>
<p>2. The pre-Master's programme comprises [30] EC and is made up by the Admission Board, and depends on the prior knowledge of the candidate.</p>	<p>advies OLC; instemming FGV (9.38 b)</p>
<p>3. A successfully completed pre-Master's programme serves as proof of admission to the specified Master's programme in the subsequent academic year.</p>	<p>advies OLC; instemming FGV (9.38 b)</p>

8. Interim examinations and results

Article 8.1 Sequence of interim examinations

<p>1. Students may participate in interim examinations [or practical exercises] of the components below only if they have passed the interim examination or examinations for the components mentioned hereinafter:</p> <p>Before starting an internship and/or graduation project, the student must have earned all other programme credits. A shortfall of 6 credits is permissible, as long as it does not include credits for the Research Paper Business Analytics or the Research Seminar Business Analytics.</p>	<p>Advies OLC; approval FGV (7.13 h, s & t)</p>
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Article 8.2 Validity period for results

<p>1. As laid down in Article 3.8.</p>	<p>Advies OLC; approval FGV (7.13 k)</p>
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Art. 8.3. Degree

<p>Degree Students who have successfully completed their Master's final Examination are awarded a Master of Science degree. The degree awarded is stated on the diploma. If it is a joint degree, this will also be stated on the diploma. Track name will be stated on the diploma, either 'Professional' or 'Dual' if one has successfully completed at least 24 EC of the specific track; otherwise no track name will be stated on the diploma.</p>

Section B2: Programme specific – content of programme

9. Programme objectives, specializations and exit qualifications

Article 9.1 Workload

The programme has a workload of 120 EC.	Advice OLC; (7.13 a)
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Article 9.2 Specializations

The programme has the following specializations: a) Professional track b) Dual variant	Advice OLC; (7.13 a)
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Article 9.3 Programme objective

The programme aims to acquire sufficient knowledge, skills and insight within the field of Business Analytics and any related disciplines to be able to operate as an independent professional at graduate level, and to be a suitable candidate for a subsequent course of study leading to a career in research or development. Another aim of the programme is to develop students' understanding of the interrelationships between disciplines, as well as their sense of social responsibility.	Advice OLC; (7.13 a)
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Article 9.4 Exit qualifications

<p>1. At all events, a graduate of the study programme:</p> <ul style="list-style-type: none"> - has knowledge about advanced methods in a broad field of mathematics and computer science as applied to commercial and industrial processes; - has experience in conducting applied research in a branch of mathematics and computer science in a multidisciplinary business context; - is capable of gaining a working knowledge of other relevant branches of mathematics and computer science within a reasonable period of time; - is capable of formulating a plan for a research project based on a realistic research question; - is able to analyse and formulate research results, draw conclusions from them, and present these conclusions (in English) so that even non-specialists are able to comprehend them; - is capable of independent and critical reflection on his/her own and others' work in accordance with relevant frameworks of applicability; - is capable of writing a report in English on his/her own research that meets the prevailing academic standards in the fields of mathematics and computer science; - is capable of participating in discussions on field-specific topics of interest, in English and potentially in another language or languages; - is capable of studying the professional literature (including international publications) in relevant branches of mathematics and computer science, and of utilizing the relevant content; - has experience in modelling complex business processes using advanced methods from mathematics and computer science; - is capable of working in a multidisciplinary team and, more specifically, has sufficient knowledge of the theory and practice in the field of business economics to communicate and collaborate with experts in these areas; - has sufficient knowledge and understanding of the societal role of mathematics and computer science to decide on a responsible choice of profession and professional practice. 	Approval OLC (7.13 c)
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10. Curriculum structure

Article 10.1 Composition of the programme

1. The programme comprises at least a package of compulsory components and an individual Master's thesis or academic internship.	Ordinance CvB, see appendix 3
2. Additionally the programme offers: - Constrained selection - Electives	Advice OLC; (7.13 a)
3. Educational components are categorized as specialized (400), research oriented (500) and highly specialized (600) level.	Ordinance CvB, see appendix 3
4. The programme comprises at most three 300-level (advanced bachelor level) courses in total.	Advice OLC; (7.13 a)

Article 10.2 Compulsory educational components

A detailed description per educational component can be found in the Study Guide.

Dual variant:

Name of educational component	course code	nr of EC	level	Advice OLC; (7.13 a)
Advanced Machine Learning	XM_0010	6	400	
Applied Analysis: Financial Mathematics	X_400076	6	400	
Applied Stochastic Modeling	X_400392	6	400	
Data Mining Techniques	X_400108	6	500	
Dual Workperiod	XM_41010	12	500	
Master Project Business Analytics	X_400459	36	600	
Research Seminar Business Analytics	XM_0054	6	500	
Statistical Models	X_400418	6	400	

Professional track:

Name of educational component	course code	nr of EC	level	Advice OLC; (7.13 a)
Advanced Machine Learning	XM_0010	6	400	
Applied Analysis: Financial Mathematics	X_400076	6	400	
Applied Stochastic Modeling	X_400392	6	400	
Data Mining Techniques	X_400108	6	500	
Master Project Business Analytics	X_400459	36	600	
Project Optimization of Business Processes	X_400213	6	500	
Research Seminar Business Analytics	XM_0054	6	500	
Statistical Models	X_400418	6	400	

Article 10.3 Elective educational components

Dual variant (18 EC required):

1. The student can take one or more of the following electives without prior consent from the Examination Board:				Advice OLC; (7.13 a)
Name of educational component	course code	nr of EC	level	
Advanced Linear Programming	X_400326	6	400	
Asset Pricing	E_FIN_AP	6	400	
Business Process Analytics	X_400650	6	400	
Continuous Optimization	X_400446	6	400	
Derivatives	E_FIN_DER	6	400	
Entrepreneurship in Data Science and Analytics	X_405122	6	400	

Evolutionary Computing	X_400111	6	400	
Financial Markets and Institutions	E_FIN_FMI	6	400	
Heuristic Methods in Operations Research	X_418006	6	400	
Investments	E_EBE3_INVES	6	300	
Mathematical Optimization	XM_0051	6	400	
Optimization of Business Processes	X_400422	6	400	
Performance of Networked Systems	X_405105	6	400	
Project Optimization of Business Processes	X_400213	6	500	
Quantitative Financial Risk Management	E_FIN_QFRM	6	400	
Scheduling	X_400396	6	400	
Statistics for Networks	X_405110	6	600	
Stochastic Optimization	X_400336	6	400	
Stochastic Processes for Finance	X_400352	6	400	
2. If the student wishes to take a different educational component than listed, advance permission must be obtained in writing from the Examination Board.				Advice OLC; (7.13 a)

Professional track (24 EC required):

3. The student can take one or more of the following electives without prior consent from the Examination Board:				Advice OLC; (7.13 a)
Name of educational component	course code	nr of EC	level	
Advanced Linear Programming	X_400326	6	400	
Asset Pricing	E_FIN_AP	6	400	
Business Process Analytics	X_400650	6	400	
Continuous Optimization	X_400446	6	400	
Derivatives	E_FIN_DER	6	400	
Entrepreneurship in Data Science and Analytics	X_405122	6	400	
Evolutionary Computing	X_400111	6	400	
Financial Markets and Institutions	E_FIN_FMI	6	400	
Heuristic Methods in Operations Research	X_418006	6	400	
Investments	E_EBE3_INVES	6	300	
Mathematical Optimization	XM_0051	6	400	
Optimization of Business Processes	X_400422	6	400	
Performance of Networked Systems	X_405105	6	400	
Quantitative Financial Risk Management	E_FIN_QFRM	6	400	
Scheduling	X_400396	6	400	
Statistics for Networks	X_405110	6	600	
Stochastic Optimization	X_400336	6	400	
Stochastic Processes for Finance	X_400352	6	400	
4. If the student wishes to take a different educational component than listed, advance permission must be obtained in writing from the Examination Board.				Advice OLC; (7.13 a)

Article 10.4 Practical exercise

Not applicable.	Approval OLC (7.13 d)
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Article 10.5 Participation in practical exercise

Not applicable.	Approval OLC (7.13 d)
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11. Evaluation and transitional provisions

Article 11.1 Evaluation of the education

1. The education provided in this programme is evaluated in accordance with the (attached) evaluation plan. The faculty evaluation plan offers the framework.	Approval OLC (7.13 a1)
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Article 11.2 Transitional provisions

<p>By way of departure from the Teaching and Examination Regulations currently in force, the following transitional provisions apply for students who started the programme under a previous set of Teaching and Examination Regulations:</p> <p>a) The course Research Paper Business Analytics (X_400206) may be replaced by the course Research Seminar Business Analytics (XM_0054).</p> <p>b) The course Advanced Machine Learning (XM_0010) can be considered to be a course in the list of Constrained selection courses.</p>	Advice OLC (7.13 a)
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Advice and approval by the Programme Committee, on (date) June 12, 2018

Approved by the Faculty Joint Assembly, on (date) June 26, 2018

Adopted by the board of the Faculty of Science on June 26, 2018.

Appendix I**Overview of articles that must be included in the OER**

Based on Section 7.13, paragraph 2, of the WHW and other Sections of the Act.

Section A: Faculty section

2. Study programme structure	
Article 2.1 Structure of academic year and educational components	7.13 paragraph 2 sub e
3. Assessment and Examination	
Article 3.2 Type of examination	7.13 paragraph 2 sub h, l, j
Article 3.3 Oral interim examinations	7.13 paragraph 2 sub l, n
Article 3.4 Determining and announcing results	7.13 paragraph 2 sub o
Article 3.5 Examination opportunities	7.13 paragraph 2 sub h, j
Article 3.7 Exemption	7.13 paragraph 2 sub r
Article 3.8 Validity period for results	7.13 paragraph 2 sub k
Article 3.9 Right of inspection and post-examination discussion	7.13 paragraph 2 sub p, q
4. Academic student counselling and study progress	
Article 4.1 Administration of study progress and academic student counselling	7.13 paragraph 2 sub u
Article 4.2 Adaptations for students with a disability	7.13 paragraph 2 sub m

Section B1: Programme specific – general provisions

6. General programme information and characteristics	
Article 6.1 Study programme information	7.13 paragraph 2 sub i, r
Article 6.2 Teaching formats used and modes of assessment	7.13 paragraph 2 sub l, x
[option:] Article 6.3 Academic student counselling	7.13 paragraph 2 sub u
7. Further admission requirements	
Article 7.2 Admission requirements	7.30b paragraph 2
8. Interim examinations and results	
Article 8.1 Sequence of interim examinations	7.13 paragraph 2 sub h, s, t
[option 1:] Article 8.2 Validity period for results	7.13 paragraph 2 sub k
[option 2:] Article 8.2 Validity period for results	7.13 paragraph 2 sub k

Section B2: Programme specific – content of programme

9. Programme objectives, specializations and exit qualifications	
Article 9.1 Workload	7.13 paragraph 2 sub g
Article 9.2 Specializations	7.13 paragraph 2 sub a
Article 9.3 Programme objective	7.13 paragraph 2 sub a
Article 9.4 Exit qualifications	7.13 paragraph 2 sub b, c
10. Curriculum structure	
Article 10.1 Composition of the programme	7.13 paragraph 2 sub a
Article 10.2 Compulsory educational components	7.13 paragraph 2 sub a
[Optional] Article 10.3 Elective educational components	7.13 paragraph 2 sub a
[Optional] Article 10.4 Practical exercise	7.13 paragraph 2 sub d
Article 10.5 Participation in practical exercise	7.13 paragraph 2 sub d
11. Evaluation and transitional provisions	
Article 11.1 Evaluation of the education	7.13 paragraph 2 sub a1
Article 11.2 Transitional provisions	7.13 paragraph 2 sub a

Appendix II

Table of right of advice and right of approval by the OLC and FGV
(translation to English at a later stage)

Onderwerpen Onderwijs – en Examenregeling (OER) 7.13 paragraph 2	FGV		OpIC	
	I	A	I	A
WHW				
a. de inhoud van de opleiding en van de daaraan verbonden examens				
a1. de wijze waarop het onderwijs in de desbetreffende opleiding wordt geëvalueerd				
b. de inhoud van de afstudeerrichtingen binnen een opleiding				
c. de kwaliteiten op het gebied van kennis, inzicht en vaardigheden die een student zich bij beëindiging van de opleiding moet hebben verworven				
d. waar nodig, de inrichting van praktische oefeningen				
e. de studielast van de opleiding en van elk van de daarvan deel uitmakende onderwijseenheden				
f. de nadere regels, bedoeld in de Articleen 7.8b, zesde paragraph, en 7.9, vijfde paragraph (BSA)				
g. ten aanzien van welke masteropleidingen toepassing is gegeven aan Article 7.4a, achtste paragraph (<i>verhoogde studielast</i>)				
h. het aantal en de volgtijdelijkheid van de tentamens alsmede de momenten waarop deze afgelegd kunnen worden				
i. de voltijdse, deeltijdse of duale inrichting van de opleiding				
j. waar nodig, de volgorde waarin, de tijdvakken waarbinnen en het aantal malen per studiejaar dat de gelegenheid wordt geboden tot het afleggen van de tentamens en examens				
k. waar nodig, de geldigheidsduur van met goed gevolg afgelegde tentamens, behoudens de bevoegdheid van de examencommissie die geldigheidsduur te verlengen				
l. of de tentamens mondeling, schriftelijk of op een andere wijze worden afgelegd, behoudens de bevoegdheid van de examencommissie in bijzondere gevallen anders te bepalen				
m. de wijze waarop studenten met een handicap of chronische ziekte redelijkerwijs in de gelegenheid worden gesteld de tentamens af te leggen				
n. de openbaarheid van mondeling af te nemen tentamens, behoudens de bevoegdheid van de examencommissie in bijzondere gevallen anders te bepalen				
o. de termijn waarbinnen de uitslag van een tentamen bekend wordt gemaakt alsmede of en op welke wijze van deze termijn kan worden afgeweken				
p. de wijze waarop en de termijn gedurende welke degene die een schriftelijk tentamen heeft afgelegd, inzage verkrijgt in zijn beoordeelde werk				
q. de wijze waarop en de termijn gedurende welke kennis genomen kan worden van vragen en opdrachten, gesteld of gegeven in het kader van een schriftelijk afgenomen tentamen en van de normen aan de hand waarvan de beoordeling heeft plaatsgevonden				
r. de gronden waarop de examencommissie voor eerder met goed gevolg afgelegde tentamens of examens in het hoger onderwijs, dan wel voor buiten het hoger onderwijs opgedane kennis of vaardigheden, vrijstelling kan verlenen van het afleggen van een of meer tentamens				
s. waar nodig, dat het met goed gevolg afgelegd hebben van tentamens voorwaarde is voor de toelating tot het afleggen van andere tentamens				
t. waar nodig, de verplichting tot het deelnemen aan praktische oefeningen met het oog op de toelating tot het afleggen van het desbetreffende tentamen, behoudens de bevoegdheid van de examencommissie vrijstelling van die verplichting te verlenen, al dan niet onder oplegging van vervangende eisen				
u. de bewaking van studievoortgang en de individuele studiebegeleiding				
v. indien van toepassing: de wijze waarop de selectie van studenten voor een speciaal traject binnen een opleiding, bedoeld in Article 7.9b, plaatsvindt (<i>excellentietaject binnen een opleiding</i>)				
x. de feitelijke vormgeving van het onderwijs				
<i>alle overige onderwerpen die in de OER zijn geregeld maar die niet als zodanig zijn genoemd in art. 7.13 WHW onder a t/m x.</i>				

De lettering komt overeen met de lettering van Article 7.13 paragraph 2 WHW

Appendix III

Ordinances VU CvB and Binding Guidelines (richtlijn)

Section A, article:	Concerns:	CvB ordinance / guideline
2.1.1, 2.1.2	Year planning two semesters 8-8-4 (uniforme jaarkalender VU-UvA)	29-9-2008 (period 2009-2015) 22-05-2014 (periode 2016-2025)
2.1.3, 2.1.4	Educational components	Richtlijn Bachelor en Masteronderwijs, revised on 6 June 2017
3.1	Compulsory signing up	CvB ordinance 30-09-2010, prior consent USR.
3.4.1	Determination and publication of the results (1) Grading deadline exams 10 workdays (2) Theses 20 workdays	(1) Richtlijn Bachelor en Masteronderwijs, revised on 6 June 2017 (2) Quality demand 11 from the VU assessment policy, CvB ordinance 15-05-2012
3.5.1	Two possibilities to take examinations per year	Richtlijn Bachelor en Masteronderwijs, revised on 6 June 2017
3.5.2	Retake: most recent grade is valid. A pass can be retaken	Taken from the UvA guidelines, as part of the harmonization, CvB ordinance 24-02-2014
3.5.4	Extra retake last year	Included in (prior) model OER 16-17 following a request from committee O&O and adopted by CvB op 27-10-2015
3.6	Grades	CvB ordinance 30-09-2010, with University council's consent. As a result of harmonization UvA, the guideline: 5.5 is a pass, has been added. CvB ordinance 24-02-2014.
Section B1, article:	Concerns:	CvB ordinance / guideline
7.2.1	Admission criteria; at least WO Bachelor's degree	Richtlijn Bachelor en Masteronderwijs, revised on 6 June 2017
7.2.3	Additional admission criteria; type of criteria	Richtlijn Bachelor en Masteronderwijs, revised on 6 June 2017
Section B1, article:	Concerns:	CvB ordinance / guideline
10.1	Composition programme	Richtlijn Bachelor en Masteronderwijs, revised on 6 June 2017
10.2	Categorization of components	Richtlijn Bachelor en Masteronderwijs, revised on 6 June 2017