

# Programme-specific Annex to the Teaching and Examination Regulations for the Bachelor's programme in Business & IT

The rules in this Annex are part of the programme portion of the Student Charter, including the Teaching and Examination Regulations for the Bachelor's programme in Business & IT offered by the Faculty of Electrical Engineering, Mathematics and Computer Science of the University of Twente.

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# 1. CONTENTS AND STRUCTURE OF THE PROGRAMME

## 1.1 **General objectives of the programme (Article 7.13, paragraph 2c of the Higher Education and Research Act)**

The Bachelor's programme in Business & IT (BIT) focuses on providing academic training to Bachelor's students to enable them to graduate with knowledge, insight and experience in the integrated and coordinated development of business processes in organizations and associated information and communication technology support structures. The graduates have thorough understanding and insight into the academic disciplines of Computer Science and Industrial Engineering and Management, and they are capable of integrating their knowledge and insights.

Students develop an academically inquisitive attitude while on the programme, along with thorough technical understanding, insight and experience in the integrated application of their expertise in a design process. Programme graduates are thus capable of working with advanced IT in an academically prudent, ethically sound and socially responsible way, and of contributing to the further development of the field of study. Furthermore, graduates are capable of pursuing a Master's programme to specialize in a particular type of IT system or aspect of the field and/or to gain further experience by conducting scientific research. The design-oriented programme activates and challenges students by focusing on the combination of expertise, quality, creativity and technological developments, thus preparing them for a future in which they continually work on their professional development and apply their expertise appropriately, effectively and with sound professional judgement.

The Bachelor's programme in Business & IT is consistent with the University of Twente's current policies, meaning that the main objective of this Bachelor's programme is to prepare students to transition to the Master's programme in Business Information Technology. A secondary objective is to qualify the graduate for independent professional practice at the Bachelor's level.

The objective of the Bachelor's programme is to train university students to design high-quality IT systems and their applications and to adjust them to the appropriate user context. To this end, programme graduates have:

1. insight into and experience with the application of models,
2. an academically inquisitive attitude,
3. thorough technical knowledge and understanding,
4. experience in the integrated application of their expertise in a design process:
  - a. assessing the costs and benefits of potential solutions,
  - b. implementing information systems in the relevant business contexts,
  - c. the software development process (software engineering),
  - d. developing web applications and other programmes,
  - e. the interaction between people and technology.
5. the knowledge and skills to work with advanced IT in an academically prudent, ethically sound and socially responsible way,
6. the knowledge and skills to further the development of the field of study.

## 1.2 **The final attainment targets of the programme (Article 7.13, paragraph 2c of the Act)**

The programme has 21 final attainment targets, which are listed in Table 1 below. The table also shows the relationship to the six objectives (and sub-objectives) listed above.

Table 1. BIT programme final attainment targets and relationship to the objectives

<b><i>N</i></b> <b><i>o.</i></b>	<b><i>Attainment target</i></b>
	<b>A BIT graduate:</b>
1	is capable of contributing to the development of scientific knowledge in a sub-field by setting up and implementing a research plan under supervision;
2	is capable of contributing to the further development of a sub-field and/or the broad application of field-specific expertise;
3	is capable of analysing field-specific problems (related to changes or otherwise) and of acquiring the information needed to solve them;

<b>N o.</b>	<b>Attainment target</b>
	<b>A BIT graduate:</b>
4	is capable of devising solutions/designing systems by selecting and implementing field-specific expertise, methods and techniques;
5	is able to evaluate the properties and problem-solving potential of solutions/systems and to make a substantiated choice between different solutions on the basis of his/her evaluation;
6	is capable of analysing and discussing ethical, social, cultural and societal aspects of problems, solutions and developments in the field;
7	is capable of working as part of a team, and of planning, managing and documenting a development process;
8	is capable of providing substantiation for research and design, and of giving presentations, both orally and in writing, to various target groups, consisting of both critical peers and non-specialists;
9	is capable of independently acquiring new knowledge and skills;
10	takes a multidisciplinary approach and is knowledgeable about at least one other field;
11	is capable of predicting the properties of a practical problem in the field of business information technology, and of subsequently selecting, justifying and advising on a solution;
12	understands the interaction between the design and implementation of information technology and the development of the organization as a social system comprised of individuals and groups in a process of collaboration;
13	understands the structure and process behind the production of goods and services;
14	understands costing and budgeting and their significance for the ability to manage business processes;
15	understands the role of information technology in business operations. Knows how to analyse, design and/or redesign the information systems that support these operations, making use of familiar methods for analysis and design;
16	understands the definitive role information technology plays in designing and running business processes. Has the basic knowledge needed for designing processes and the requisite information infrastructure, and is capable of making elementary decisions regarding quality and risk management;
17	has experience with methods and techniques for the design of databases, as well as of relevant implementation and maintenance aspects, and understands these methods and techniques;
18	understands the methods, techniques and tools for the development of software systems, and understands the management and quality aspects of the software development process and software products;
19	has a qualitative understanding of the layer structure of communication systems, focusing on the exchange of information between system components;
20	knows and understands how to design user interfaces, focusing on the interactions between the end-users and the system;
21	is knowledgeable about the scientific literature in the sub-field of business information systems and has experience with setting up, carrying out and presenting individual research in this sub-field under supervision;
22	Has intercultural skills.

### 1.3 Content of the programme and related examinations (Article 7.13, paragraph 2a of the Act)

The table below shows the units of study comprising the Twente Education Model (TOM) curriculum. The Board of Examiners of the relevant programme is to publish details regarding the content of a unit of study in the course catalogue at least six weeks before the start of the teaching period (semester or quarter) in which the unit of study is offered.

#### 1.3.1 The TOM curriculum (Cohorts from 2013 and later)

The table below shows the subjects in the order in which they are offered, the student's preferred prior knowledge and any additional prerequisites. The associated examination tables are included in Annex 1.

**Table 2.**

Course code	Course name	Q	Prerequisites
<b>Year 1</b>			
201300073	Introduction to BIT	1A	
201500111	Software Systems	1B	Desirable: 201300073 (Math A +B1)
201300107	Business Intelligence & IT	2A	
201300180	Data & Information	2B	Desirable: 201500111
<b>Year 2</b>			
201400301	Finance for Engineers	1A	
201600105	Intelligent Interaction Design	1B	
201400467	From Product Design to Online Business	2A	Gewenst: alle voorgaande modules
201500310	Business Innovation through IT Project Management	2B	
<b>Year 3</b>			
xxxxxxxxx	Minor	1A	Compulsory: 75EC upon registration
xxxxxxxxx	Minor	1B	Compulsory: 75EC upon registration
201500119	BIT INC.	1A or S2	Compulsory: 120EC (Excluding minor)
201500120	Research Project	1B or S2	Compulsory: 120EC (Excluding minor)

#### 1.3.1.a Minors

See Article 3.2 of the general section of the Teaching and Examination Regulation. The in-depth module may be completed by choosing from the modules listed in Table 3. Students who choose one of the following options for their minor must first obtain permission from the Examination Board:

- Exchange Minor (EM);
- In-depth initiatives (IM), see Table 3;
- Multi Minors (MM);
- Individual minor.

**Tabel 3: In-depth Minors BIT**

Cursuscode	Cursusnaam	Q	Voorkennis
201500066	Serious Gaming	1A	n/a
201500025	Web Science	1B	n/a

The Examination Board uses the following guidelines to assess the student's request:

1. The educational component of the minor must be at an academic level;
2. At least 15 of the 30 credits must involve a paradigm shift;
  - The contents of the minor must not fall within the field of computer science; or
  - The contents of an exchange minor may fall within the field of computer science, provided that the minor is taken at an institute of higher education abroad and the educational component of the minor is at an academic level.
3. The educational component of the minor may not overlap with the programme's compulsory units of study;
4. Up to five credits may be devoted to courses on the language and culture of the host country.

See [www.utwente.nl/bit](http://www.utwente.nl/bit) for further information regarding the Examination Board's procedure for approving the minor. Once approval has been granted, the Bureau of Educational Affairs (BOZ) is responsible for the administrative procedure involved in enrolling the student in the relevant minor.

#### **1.3.1.b Sequence requirements (Article 7.13, paragraph 2s of the Act)**

1. A student may enrol in the minor through the Bureau of Educational Affairs once he/she has earned at least 75 credits;
2. A student may only enrol in the final semester modules BIT INC (201500119) and Research Project (201500120) once he/she has earned at least 120 credits, excluding minors;

#### **1.3.2. The pre-TOM curriculum (Cohorts from 2012 and earlier)**

Students who enrolled in the Bachelor's in BIT prior to 1 September 2012 must arrange for an individual examination programme.

#### **1.4 Programme format (Article 7.13, paragraph 2i of the Act)**

The programme is only offered on a full-time basis.

### **2. Language of tuition (Article 3.3, paragraph 1 of the Teaching and Examination Regulations)**

The programme is taught in English for the 2016 cohort (and later cohorts), and in Dutch for the 2015 cohort (and earlier cohorts).

### **3. ASSESSMENT**

#### **3.1 Assessment and examination formats (Article 7.13, paragraph 2l of the Act)**

Annex 1 details the examination format for each unit of study.

#### **3.2 Examination transparency**

The programme is to ensure that information is made available for each examination regarding its level, structure and marking norms, e.g. by providing a sample examination, an examination from a previous year or a collection of sample examination questions.

#### **3.3 Period of inspection**

Notwithstanding the provisions of Article 4.8, paragraphs 2 and 3 of the Teaching and Examination Regulations Guideline, an opportunity for an individual or group discussion of the examination must be offered at least three working days prior to next examination opportunity.

#### **3.4 Registration of results**

1. Exemptions for examinations are indicated with the code 'VR'.
2. Exemptions are assigned a numerical value of 6.
3. The alphanumeric results of complete (V) and incomplete (NVD) have no numerical values.
4. The highest mark achieved counts. This also applies to tests.

### **3.5 Validity of constituent marks<sup>1</sup>**

1. Annex 1 contains examination tables as a supplement to Article 4.1, paragraph 9 of the Teaching and Examination Regulations Guideline. The examination tables indicate the indivisible components of a module with a Roman numeral. The period of validity of indivisible components consisting of one or more constituent marks (i.e. one academic year) may be extended by an additional academic year. Following this extension, the components lose their validity and the student must resit the entire module.
2. The conditions for extending the validity of constituent marks are as follows:
  - a. A pass (i.e. 5.5 or higher) must be achieved for the indivisible components. Passes (i.e. 5.5 or higher) for all constituent marks must be achieved in the case of an indivisible component with multiple constituent marks. This is the case whether or not a compensation arrangement applies.
  - b. A maximum of one indivisible component may remain open;
  - c. A performance requirement of 45 credits in the second year of enrolment in the Bachelor's programme in BIT applies to the extension of validity for indivisible components of the Finance for Engineers (201400301), From Product Design to Online Business (201400467) and Business Innovation through IT Project Management (201500310) modules. These 45 credits are made up of two completed modules plus an additional 15 credits from other indivisible components of a single or multiple modules.

### **3.6 Participation in examinations**

1. Students may participate in examinations of module components offered during the module in the relevant academic year and in the following academic year;
2. Further to point 1 above, a student who is eligible for an extension of validity of constituent results of a module may participate in an additional resit for constituents not yet passed during the summer break if the programme offers such a resit. This resit opportunity applies only once during the summer break and for all modules together.
3. Points 1 and 2 do not apply if a module has already been passed.

### **3.7 Third attempt**

If a student requires more than two consecutive academic years to pass a module, then the student must agree on a study plan together with the Study Advisor at least two weeks prior to the start of the relevant module. The study plan must include agreements on time keeping, active participation in tutorials and other aspects of the module, and it must be submitted to the programme director for approval.

### **3.8 Pass/Fail Regulation**

1. Students who meet the following requirements will pass the Bachelor's final degree audit for the BIT programme:
  - a. The student has received an assessment for all units of study of the Bachelor's final degree audit;
  - b. The student's marks are 6 or higher for all units of study;In all other cases, the student will not pass the final degree audit and will not receive a Bachelor's degree.

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<sup>1</sup> The provisions in this article are consistent with the rules for extension of validity of module component grades of the study programme(s) which module is shared.

### **3.9 Cum Laude**

1. A student may pass the Bachelor's final degree audit with distinction (cum laude) upon meeting the following requirements:
  - a. The student passes the Bachelor's final degree audit within four years of initial enrolment (performance requirement);
  - b. The student's average mark is 8.0 or higher (non-numeric assessments not included). This is a weighted average based on the relative number of credits per unit of study.
  - c. No more than one unit of study may have a mark of 6.
  - d. The mark for the Research Project (201500120) is 8.0 or higher.
2. In exceptional cases and at the student's request, the Examination Board may award the distinction of cum laude if the student has met all requirements with the exception of the performance requirement, due to extenuating circumstances. These circumstances may involve delays recognized and provided for by the institution. It should be noted that the distinction of cum laude is never awarded automatically, but only following individual assessment of the student's academic achievements.

### **3.10 Confidentiality**

1. Reports of final assignments are public documents except in the following cases.
2. The Programme Board may deem a report to be confidential for a specific period based on a detailed request:
  - a. The first supervisor must submit a request to the Programme Board prior to the start of the final assignment.
  - b. The confidential report must be accessible/available to the committee responsible for assessing the final assignment, the Programme Board, and representatives of bodies that have a statutory duty of overseeing the quality of the assessment or the programme as a whole.
  - c. The parties mentioned above are required to observe confidentiality with regard to the report.
3. In the case of a confidential report as referred to in point 2, the public presentation of the report may be amended to ensure that no confidential information is made public.

## **4. BINDING RECOMMENDATION (BSA)**

When issuing binding recommendations (BSA) as referred to in Article 6.3, the programme attaches no additional provisions to the first year for regular students (Article 6.3, paragraph 7).

## **5. ADMISSION**

### **5.1 Admission requirements**

The requirements for admission are as follows:

1. The applicant must have completed pre-university education (vwo) or equivalent;
2. The applicant must have passed Mathematics B at pre-university level (vwo) or equivalent;
3. English:
  - a. The applicant must have a secondary school diploma including English as an examination subject from a country that has ratified the Lisbon Treaty; or
  - b. CEFR, B2/C1 level; or
  - c. IELTS score of 6.0 or higher; or
  - d. TOEFL score of 80 or higher.
4. There are no additional provisions regarding admission to the programme as provided for in Article 2 of the general section of these Teaching and Examination Regulations and the document mentioned therein entitled 'Entrance Examination and other admission regulations for admission to Bachelor's programmes'.

### **5.2 Admission to a Master's programme**

A student with a Bachelor's degree in Business & IT will gain automatic admission to the following Master's programmes:

- Business Information Technology
- Computer Science

## 6. STUDY MATERIALS

Students starting on the programme in September 2013 or later must obtain an 'ultra notebook' from the Notebook Service Centre (or acquire a device with similar specifications).



## Annex 1: Module examination tables

201300073 Introduction to BIT						
Module components		Type of assessment(s)	Individual / Group	Weight in the module (%)	Minimum mark	Weight of module component (%)
I	Math A & B1	Written test	I	100	5.0*	30
II	BIT/TBK Themes	4x Assignments	G	Pass	Pass	0
III	Computer Science	3x written test	I	33.33% each	5.0*	20
		3x Assignment	G	Pass for access to written tests		
IV	Research Methodology	Assignment	G	Pass	5.0*	10
		2x Assignment	G	Pass		
		MCV test	I	100		
V	Project	Product	G	100	5.5	40
		Report	G			
	Academic Skills	Assignment	I	Pass	Pass	0
<b>Weighted average</b>					<b>5.5</b>	

\*\*Out of the marked (\*) module component grades ONE mark lower than 5.5, but at least 5.0 (5.0 = <rate <5.5) is allowed.

201500111 Software Systems						
Module components		Type of assessment(s)	Individual / Group	Weight in the module (%)	Minimum mark	Weight of module component (%)
I	Math B2	Written test	I	100	5.5*	20
II	Design	Written test	I	100	5.5*	20
		Assignments	I	Pass		
	Programming	Written test	I	100	5.5*	20
		Assignments	I	Pass		
	<b>Sub-weighted average</b>				<b>5.5*</b>	
	Design Project	Report	G	100	5.5	20
	Programming Project	Product	G	100	5.5	20
Report		G				
Academic Skills	Assignments	I	Pass	Pass	0	
<b>Weighted average</b>				<b>5.5</b>		

\*Out of the marked (\*) module component grades ONE mark lower than 5.5, but at least 5.0 (5.0 = <rate <5.5) is allowed IF it's sub-weighted average is 5.5 or higher.

201300107 Business Intelligence & Information Technology						
Module components		Type of assessment(s)	Individual / Group	Weight in the module (%)	Minimum mark	Weight of module component (%)
I	Math C	Written test	I	100	5.0	20
II	Data Bases & Business Intelligence	MC test	I	100	5.5	15
III	Business Process Mgmt & Enterprise Architecture	MC test	I	100	5.5	10
IV	Research Methodology Skills	MCV test	I	100	5.5	15
		2x Assignments	I	Pass		
V	Project	Product	G	100	5.5	40
		Report	G			
	Academic Skills	Assignments	I	Pass	Pass	0
<b>Weighted average</b>				<b>5.5</b>		

201300180 Data & Information						
Module components		Type of assessment(s)	Individual / Group	Weight in the module (%)	Minimum mark	Weight of module component (%)
I	Probability theory	Written test	I	100	5.5*	20
II	5 Themes	4x Written test	I	100 each	5.5 each*	4x 10
	<b>Sub-weighted average</b>				<b>5.5*</b>	
	Project	Product	G	100	5.5	40
		Report	G			
Presentation		G				
Academic Skills	Assignments	I	Pass	Pass	0	
<b>Weighted average</b>					<b>5.5</b>	

\*Out of the marked (\*) module component grades ONE mark lower than 5.5, but at least 5.0 (5.0 = <rate <5.5) is allowed IF it's sub-weighted average is 5.5 or higher.

201400301 Finance for Engineers						
Module components		Type of assessment(s)	Individual / Group	Weight in the module (%)	Minimum mark	Weight of module component (%)
I	ICT & Law	Participation	I	Pass	5.5	15
		Written test	I	50		
		Report	G	50		
II	Accounting & Finance (TA)	Written test with open ended and MC items + Bonus*	I	100	5.0	25
	Option Pricing (TB)		I	100	5.0	15
III	Project	Project test	G	100	5.5	45
<b>Weighted average</b>					<b>5.5</b>	

\*Bonus formula

$T = (0.25 TA + 0.15 TB)/0.40$  may get extra weight

$h = \min\{(T-7) \cdot 10\%, 15\%\}$  if  $T > 7$ ,  $h=0$  otherwise

201600105 Intelligent Interaction Design							
Module components		Type of assessment(s)	Individual / Group	Weight in the module (%)	Minimum mark	Weight of module component (%)	
I	Design & Evaluation of HCI	Written test	I	100	5.5*	20	
	Statistical Techniques	Written test	I	100 – bonus x 5	5.5*	20	
		4 Assignments for bonus points	I	5% each**			
	AI Theory	Written test	I	100	5.5*	20	
	<b>Sub-weighted average</b>					<b>5.5*</b>	
	AI Practical	Lab test	G	100	5.5	15	
HCI project	Project test	G	100	5.5	25		
<b>Weighted average</b>					<b>5.5</b>		

\*Out of the marked (\*) module component grades ONE mark lower than 5.5, but at least 5.0 (5.0 = <rate <5.5) is allowed IF it's sub-weighted average is 5.5 or higher.

\*\* IF Assignment grade > test grade

201400467 From Product Design to Online Business						
Module components		Type of assessment(s)	Individual / Group	Weight in the module (%)	Minimum mark	Weight of module component (%)
I	Product Design to Online Business Theory	Written test with open ended and MC items	I	100	5.5	25
II	ERP, Apps and ICT architecture	Written test with open ended and MC items	I	100	5.5	25
III	Project Report	Project test	G	100	5.5	50
			G			
<b>Weighted average</b>					<b>5.5</b>	

201500310 Business Innovation through IT Project Management						
Module components		Type of assessment(s)	Individual / Group	Weight in the module (%)	Minimum mark	Weight of module component (%)
I	Project Management Methods & Techniques	Written test	I	100	5.5	40
II	E-Business	Written test	I	100	5.5	30
III	Project	Project plan & Reflection paper	G	100	5.5	30
	Bonus	Presentation	G	Max. 0.5 grade point on top of module grade		
<b>Weighted average</b>					<b>5.5</b>	

In-depth minor: 201500066 Serious Gaming						
Module components		Type of assessment(s)	Individual / Group	Weight in the module (%)	Minimum mark	Weight of module component (%)
I	Game quality & Game Pitch	Project test	G	100	5.5	20
	Game & Game Design documentation	Report	G	100	5.5	70
	Game design project management	Report	G	100	5.5	10
	Serious Game	Game	I	Pass	Pass	0
<b>Weighted average</b>					<b>5.5</b>	

In-depth minor: 201500025 Web Science						
Module components		Type of assessment(s)	Individual / Group	Weight in the module (%)	Minimum mark	Weight of module component (%)
I	Web Science	2x written test	I	50 each	5.5	50
	Implementation Projects	5x Report	G	100*	5.5	50
		Presentation	G	Pass		
<b>Weighted average</b>					<b>5.5</b>	

\*weight 2wk project is 2x weight 1wk project

201500119 BIT INC						
Module components		Type of assessment(s)	Individual / Group	Weight in the module (%)	Minimum mark	Weight of module component (%)
I	Research Plan	Assignment	G	100	5.5	67
	Scientific Paper	Product	G			
		Process	G			
		Presentation	G			
Reflection component	Assignments	G	100	5.5	33	
<b>Weighted average</b>					<b>5.5</b>	

201500120 Research Project						
Module components		Type of assessment(s)	Individual / Group	Weight in the module (%)	Minimum mark	Weight of module component (%)
I	Research Project	Project test	I	100	5.5	67
	Reflection component	Assignments	I	100	5.5	33
<b>Weighted average</b>					<b>5.5</b>	