



Module Catalog Cohort 2010
Fontys Hogeschool voor Techniek en Logistiek
Venlo
Course BUSINESS INFORMATICS

Summary of all module descriptions

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Purpose

This catalog of modules is a compilation of the short module descriptions that were available for the students of cohort 2010.

The overall course plan is given in the table 0.1 on the next page.

At the moment of compilation the students for which this compilation is applicable, have completed all semesters except the last semester (Graduation project in semester 8).

This programme is applicable for the students with student numbers:
2160541, 2163388, 2165779, 2159127, 2166842, and 2164743,

Venlo, Thursday 10th July, 2014.

Table 0.1: Curriculum or course plan
Major Curriculum Business Informatics – Cohort 2010

Semester 1: Foundations – I			Semester 2 : Foundations - II		
<i>Code</i>	<i>Name of Module</i>	<i>EC</i>	<i>Code</i>	<i>Name of Module</i>	<i>EC</i>
PRO1	Programming in Java – 1	6	PRO2	Programming in Java - 2	6
DBS1	Databases	5	SEN1	Software Engineering - 1	3
CSA1	Computer Systems Architecture - 1	3	MOD1	Modelling Techniques - 1	4
BUA1	Business Administration - 1	3	BUA2	Business Administration - 2	3
MAT1	Mathematics 1	4	CODE	Competences Development	1
PRJ1	Projects 1: <ul style="list-style-type: none"> ▪ Web Applications ▪ Computer Networks 	4 4	PRJ2	Projects 2: <ul style="list-style-type: none"> ▪ Information System - 1 ▪ Information System - 2 ▪ Communication 2 	3 6 1
COM	Communication	1	ENGL	English	3
Sums up to 30 EC			Sums up to 30 EC		

Semester 3: BI topics – I			Semester 4: BI topics – II		
<i>Code</i>	<i>Name of Module</i>	<i>C</i>	<i>Code</i>	<i>Name of Module</i>	<i>C</i>
BUS1	Mini Enterprise	4	BUS2	Mini Enterprise	4
STA1	Statistics 1	5	RENG	Requirements Engineering	4
ACCO	Accounting	5	ITSM	IT Service Management	5
BUMA	Business Management	5	COFI *	Corporate Finance	5
AOPR	Advanced Office Programming	6	ERP	Enterprise Resource Planning	7
APPL	Applied research methods	2	MIS	Management Inform. Systems	5
DAWA *	Data Warehouses	3			
Sums up to 30 EC			Sums up to 30 EC		

Semester 5 : Work placement/Internship			Semester 6: Minor		
<i>Code</i>	<i>Name of Module</i>	<i>C</i>	<i>Code</i>	<i>Name of Module</i>	<i>C</i>
STG1	Practical Period 1 (internship)	30	MINOR	Minor (choice)	30
Sums up to 30 EC			Sums up to 30 EC		

Semester 7 : Advanced SE topics - III			Semester 8 : Graduation		
<i>Code</i>	<i>Name of Module</i>	<i>C</i>	<i>Code</i>	<i>Name of Module</i>	<i>C</i>
COM	Communication / job application	2	STG2	Practical Period 2 (graduation)	30
SOFA	Software Factory	18			
CMOD1	Choice Module 1	5			
CMOD2	Choice Module 2	5			
Sums up to 30 EC			Sums up to 30 C		

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1 Semester 1: Foundations I

1.1 Module SE/PRO1

Title	Programming 1: introduction to object-oriented programming			
Code	PRO1			
Credits	6			
Academic year	2010-2011			
Education type	Theory (%)	Practical (%)	Project (%)	Self-study (%)
	80	20		
Description	This module is an introduction to object-oriented programming (in Java) To implement the concepts presented the programming language Java and the Java developer's kit BlueJ are used. The main topics are: Objects and classes, object interaction, grouping objects in collections, GUI programming (Swing), unit testing, inheritance.			
Literature	Objects First with Java, Barnes & Kölling,			
Classroom language	Dutch, German			

Note: 1 credit = 28 working hours

1.2 Module SE/DBS1

Title	Databases 1			
Code	DBS1			
Credits	5			
Academic year	2010-2011			
Education type	Theory (%)	Practical (%)	Project (%)	Self-study (%)
	15	35		50
Description	The students get to know the architecture and common tasks of database management systems. The following topics are covered in the course: the relational model, entity-relationship modeling, normalforms, database design, relational tuple calculus, SQL, Oracle PL/SQL, triggers, stored procedures, constraints.			
Literature	Ramez A. Elmasri, Shamkant B. Navathe: „Grundlagen von Datenbanksystemen Bachelorausgabe“, Pearson, ISBN 9783868940121			
	Christoph Allen: „ORACLE – PL / SQL für Einsteiger“, Hanser Verlag, Serie „Authorized Oracle Press Editions“, ISBN3446218017			
Classroom language	Dutch, German			

Note: 1 credit = 28 working hours

1.3 Module SE/CSA1

Title	Computer Systems Architectures			
Code	CSA1			
Credits	3			
Academic year	2010-2011			
Education type	Theory (%)	Practical (%)	Project (%)	Self-study (%)
	100			
Description	<p>Theoretical approach of the following subjects: Transmission media, asynchrone communication, modulation and modems Packets, packet switched networks, frames, LAN/WAN-technics, routing, protocols and layers. Internet architecture, IP-addresses, IPv6, ARP, ICMP, TCP, UDP FTP, HTTP, DNS and DHCP TODO: strip what is removed in 2010.</p>			
Literature	Douglas E. Comer; Computer Networks and Internets, 4 th Edition; Pearson International Edition, ISBN 0-13-123627-X			
Classroom language	Either Dutch or German			

Note: 1 credit = 28 working hours

1.4 Module BI/BUA1

Title	Business Administration 1			
Code	BUA1			
Credits	3			
Academic year	2010-2011			
Education type	Theory (%)	Practical (%)	Project (%)	Self-study (%)
	50	10		40
Description	<p>After graduation students will be working in an company. Businesses always work in an environment that they cannot control and that they have to manage. Manage their stakeholders, manage their products and manage their processes. As a graduate you will be working in this environment and you need to know the basics of how a business is ran.</p> <p>Subjects that will be addressed are:</p> <ul style="list-style-type: none"> • What is business administration? • How are organisations set up? • What are the consequences of a choice is legal form for your business? • What (production) processes need to be managed? 			
Literature	NL:			
	Basisboek Bedrijfskunde Een Inleiding In Management En Ondernemerschap - S.W. Douma			
	Deutsch:			
	Einführung in die betriebswirtschaftslehre – Klaus Olfert			
Classroom language	Dutch or German			

Note: 1 credit = 28 working hours

1.5 Module SE/MAT1

Title	Mathematics 1			
Code	MAT1			
Credits	4			
Academic year	2010-2011			
Education type	Theory (%)	Practical (%)	Project (%)	Self-study (%)
	40			60
Description	Basics of set theory. (sets of numbers), propositional logic, order of magnitude, real numbers, fractions, summation and product symbols, binomial forms, binomial theorem, factorials, binomial coefficients, square root, powers, logarithms, quadratic equations, inequalities and modulus.			
Literature	Discrete Mathematics (2nd edition), Lipschutz (Schaum's Outlines), ISBN 0-07-038045-7			
	Brückenkurs Mathematik (10 Auflage), Bosch (Oldenbourg) ISBN 3-486-25729-3			
Classroom language	German or Dutch			

Note: 1 credit = 28 working hours

1.6 Module SE/PRJ1

Title	Project 1			
Code	PRJ1			
Credits	9			
Academic year	2010-2011			
Education type	Theory (%)	Practical (%)	Project (%)	Self-study (%)
			70	30
Description	<p>Is divided in 2 sub projects, PRJ11 to PRJ12.</p> <p>PRJ11: Based on a case description the project group (5 students) develop an application based on the GUIDE method. Goal is to implement a prototype of the application graphical interface. In the second part of this project students turn this prototype into a real application based on html, css, php and mysql.</p> <p>PRJ12: Based on a case description, students develop a client server network with one windows server and a number of windows xp clients. Involved technologies are: dhcp, dns, NAT routing, active directory, back up technologies and strategies.</p> <p>In all these project communication is part of the goals, students have to write reports and have to present there way of working and there results in a power point presentation to the lecturers and the peer groups</p>			
Literature	Graphical User Interface Design and Evaluation, D. Redmond- Pyle & A. Moor, Prentice Hall, 1995, ISBN 0-1 3-315193-X			
Classroom language	German or Dutch			

Note: 1 credit = 28 working hours

2 Semester 2: Foundations II

2.1 Module SE/PRO2

Title	Programming 2			
Code	PRO2			
Credits	6			
Academic year	2010-2011			
Education type	Theory (%)	Practical (%)	Project (%)	Self-study (%)
	15	35		50
Description	<p>Students will gain more insights in Java and how it is applied to practical problems. The following core competences of a software developer are considered: Developing with essential elements of Java, appropriate usage of the programming language, and application of object oriented concepts. Moreover, usage of a professional programming development environment, and the usage of standard libraries is essential. Students will gain basic knowledge of essential features and classes of the Java language. Important concepts will be presented and exercised during practical work in the computer laboratories. The students know how to develop, execute and test within a professional programming environment. The usage of essential libraries is also covered.</p>			
Literature	David Barnes, Michael Kölling: Java lernen mit BlueJ, 2. Auflage, ISBN 3-8273-7152-X			
	Marty Hall, Larry Brown: Core Servlets and Java Server Pages, 2. Auflage, ISBN 3-8272-6954-7 TODO: Add JSF title.			
Classroom language	German			

Note: 1 credit = 28 working hours

2.2 Module SE/SEN1

Title	SEN1 Software Engineering 1			
Code	SEN1_I			
Credits	3			
Academic year	2010-2011			
Education type	Theory (%)	Practical (%)	Project (%)	Self-study (%)
	40	60		
Description	<p>A practical approach to testing, in particular unit testing. We choose this didactic model to both improve student programming skills as well as the software engineering reasons for using (automated) testing. The module also introduces a few software process aspects and gives practical guidelines to both software creation and version control.</p>			
Literature	Objekt Orientiertes Testen und Testautomatisierung in der Praxis, dPunkt Verlag Heidelberg. ISBN 3-89864-305-0 (for the German class)			
	Object georiendeerd Testen en Testautomatisering in de praktijk. Fontys uitgave. (for the Dutch class)			
Classroom language	Dutch, German			

Note: 1 credit = 28 working hours

2.3 Module SE/MOD1

Title	Object oriented modeling with UML			
Code	MOD1			
Credits	4			
Academic year	2010-2011			
Education type	Theory (%)	Practical (%)	Project (%)	Self-study (%)
	12.5	75		12.5
Description	<p>Students learn how to use UML and how to design a domain model using UML. Students make a design and work individually or in a small group, depending on the number of students. This case study starts with a case description and leads to an acceptable class diagram in the first stage of the module. CRC cards are used to obtain the responsibilities for each class. The class diagram has been tested against use case scenarios using sequence diagrams.</p> <p>In the second stage of this module, the design is more implementation oriented. More details are added, state diagrams are used to describe certain classes. Activity diagrams may also be used to get a more complete design. Interaction frames are now introduced in sequence diagrams to show how certain scenarios should be implemented. Important use case scenarios are transformed to concrete test scenarios. Finally a test driven development phase is started. A first implementation in Java is done, based on the test scenarios.</p>			
Literature	Martin Fowler: "UML Distilled", third edition, 2003, Addison Wesley.			
Classroom language	Dutch, English, German, as needed.			

Note: 1 credit = 28 working hours

2.4 Module BI/BUA2

Title	Business Administration 2			
Code	BUA2			
Credits	3			
Academic year	2010-2011			
Education type	Theory (%)	Practical (%)	Project (%)	Self-study (%)
	50			50
Description	<p>Business Administration 2 is the 2nd part of the module Business Administration. It is the sequel of BUA1.</p> <p>It handles:</p> <ul style="list-style-type: none"> • Marketing • Finance • Administration • Controlling 			
Literature	NL:			
	Basisboek Bedrijfskunde Een Inleiding In Management En Ondernemerschap - S.W. Douma			
	Deutsch:			
	Einführung in die betriebswirtschaftslehre – Klaus Olfert			
Classroom language	Dutch or German			

Note: 1 credit = 28 working hours

2.5 Module SE/CODE

Title	Competence Development			
Code	CODE			
Credits	1			
Academic year	2010-2011			
Education type	Theory (%)	Practical (%)	Project (%)	Self-study (%)
	20			8
Description	<p>Main topic in this course is to get insight in the profession of an informatics professional. To this end we organise guest lectures with speakers from different companies, introducing their company and the work they do. The frequency of the lectures is about 1 every 2 weeks.</p> <p>A second topic is that the student learns what is meant with the domain specific competences as there are: analyse, advice, design, implement and manage, and the general competences comprised of Dublin descriptors.</p> <p>A third topic is study career coaching, where the student has regular conversations with his study career coach, The intent is to let the student reflect on his first study year in relation to the said competences.</p>			
Literature	None			
Classroom language	English + (Dutch or German)			

Note: 1 credit = 28 working hours

2.6 Module SE/PRJ2

Title	Projects 2			
Code	PRJ2			
Credits	10			
Academic year	2010-2011			
Education type	Theory (%)	Practical (%)	Project (%)	Self-study (%)
			100	
Description	<p>The students apply their knowledge from the database, programming and modeling courses to develop a small web based information system. They work in groups of 4-6 students. In the first half of the project the students create analysis artifacts (user specification, use cases, domain model, prototypes) and design artifacts (class diagrams, sequence diagrams, ER-diagrams) and verification artifacts (test plans). In the second half of the project, the application is developed using Java web technology (Java Faces (JSF)), an oracle database and JDBC to access the database from the web application and tested according the test plans developed in the first part.</p>			
Literature				
Classroom language	Dutch, German			

Note: 1 credit = 28 working hours

3 Semester 3: BI Topics I

3.1 Module BI/BUS1

Title	Business 1			
Code	BUS1			
Credits	8			
Academic year	2011-2012			
Education type	Theory (%)	Practical (%)	Project (%)	Self-study (%)
			100	
Description	<p>In the Business project students of different nationalities and fields of study together found and run a company for a year to break it up in the end. A Dutch foundation that encourages entrepreneurship, provides an official legal framework, that allows the students to establish a company and to bring shares on the market in order to gain a starting capital. In the end they should be able to pay their shareholders back with some profit and also to keep some profit for themselves. The studies in concern are economics, informatics and engineering. Although there are more nationalities involved, the most frequent nationalities are the Dutch and the German. Since the students have different nationalities, the spoken and written language is compulsory English. The students contemplate a suitable product, have to develop a business plan, including a marketing and sales strategy and a production process. They produce and sell their product themselves on occasions of their own choice, e.g. Christmas fairs, open door days at school, in the streets etc. The students have to organize themselves in departments (e.g. human resources, general management) and appoint managers. In addition the students have to organize two shareholder meetings. The student group, typically 10 students is supported by one counselor from the university, an external entrepreneur and a financial specialist. The project runs over two semesters, after the first semester (BUS1) extensive feedback and an intermediate appraisal is given. After a year (BUS2) when results are finalized, a final mark is given.</p>			
Literature	Project manual.			
Classroom language	English			

Note: 1 credit = 28 working hours

3.2 Module BI/STA1

Title	Statistics 1			
Code	STA1			
Credits	5			
Academic year	2011-2012			
Education type	Theory (%)	Practical (%)	Project (%)	Self-study (%)
	40	30		30
Description	<p>Goal of the course STA1 in is to give student basic knowledge and skills in applied statistics.</p> <p>Main topics in the course are:</p> <ul style="list-style-type: none"> - What is statistics, types of variables and data. - Organizing and graphing data - Numerical descriptive measures - Discrete random variables and their probability distributions - Combinations and permutations - Binomial and Poisson probability distributions - Sampling Distributions - Mean and standard deviation, Sampling Distributions - Estimation of a Population Mean and Proportion - Hypothesis tests about the Mean an Proportion <p>Each topic will be intro by the lecturer, students have to make exercises for each topic, exercises will be discussed in classroom.</p>			
Literature	<p>Chapters 1,2,3,5,7,8,9 of: Introductory Statistics, seventh edition, Prem S. Mann, John Wiley & Sons, ISBN: 978-0-470-50583-0</p>			
Classroom language	English			

Note: 1 credit = 28 working hours

3.3 Module BI/ACCO

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3.4 Module BI/BUMA

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3.5 Module BI/AOPR

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3.6 Module SE/APPL

Title	Applied Research			
Code	APPL			
Credits	2			
Academic year	2011-2012			
Education type	Theory (%)	Practical (%)	Project (%)	Self-study (%)
	12.5	75		12.5
Description	<p>The goal is to learn how to make a structured design for an applied research topic. Research question(s) and subquestions are transformed into more elementary questions about the relevant constructs and aspects. These are the basis for an instrument, e.g. a questionnaire. Students use the theory for a private research case study. With the instrument(s) data will be gathered. The analysis of the results should lead to findings that are grounded. If the design is sound then the original research questions are answered and the results can be easily justified.</p>			
Literature	Nel Verhoeven, Doing Research, isbn: 9789047300649, Boom 2008.			
Classroom language	English			

Note: 1 credit = 28 working hours

3.7 Module BI/DAWA

Title	Data Warehousing			
Code	DAWA			
Credits	5			
Academic year	2011-2012			
Education type	Theory (%)	Practical (%)	Project (%)	Self-study (%)
	40%	40%		20%
Description	<p>For the decision process in companies it is of essential importance to have an integrated view on all data which are relevant for the decisions. Classical database systems cannot deliver this information, or can only deliver it with unreasonable effort. A data warehouse system is a company wide information system which offers such an integration including possibilities for data analysis on top of it.</p> <p>During the course the architecture of data warehouses, relevant technologies and tools for the design and development of a data warehouse and the analysis of the available data are covered in detail. Moreover, the development process is emphasized, and commercial support for single phases will be discussed. Questions concerning a data warehousing project are also covered.</p> <p>The course consists of the following topics:</p> <ul style="list-style-type: none"> • Importance and Application areas of data warehouses • Reference architecture (data sources, data staging, meta data, data marts) • ETL processes (extraction, transformation, loading) • Development of data models (star scheme, snowflake schema) • Online Analytical Processing (OLAP) and its typical operations (roll up, drill down, etc.) • Data Mining Basics • The data warehouse development process <p>Extensive practical part using Oracle Warehouse Builder technology.</p>			
Literature	[Ponniah, Paulraj]: Data Warehousing Fundamentals: A Comprehensive Guide for IT Professionals, Wiley, 2001. ISBN: 0-471-41254-6			
Classroom language	English			

Note: 1 credit = 28 working hours

3.8 Module SE/FND1

Title	Algorithms and Data Structures			
Code	FND1			
Credits	6			
Academic year	2011-2012			
Education type	Theory (%)	Practical (%)	Project (%)	Self-study (%)
	20	30	0	50
Description	Elementary course on algorithms and data structures. Content: algorithms and complexity, big O notation; abstract data types and design issues; datastructures array and linked list, queue and stack, binary tree and tree traversals, priority queue; algorithms divide and conquer, sorting insertion, selection, quicksort, heapsort.			
Literature	Robert Sedgewick: Algorithms in Java, Parts 1-4, third Edition.			
Classroom language	Dutch-German-English			

Note: 1 credit = 28 working hours

4 Semester 4: BI Topics II

4.1 Module BI/BUS2

Title	Business 2			
Code	BUS2			
Credits	4			
Academic year	2011-2012			
Education type	Theory (%)	Practical (%)	Project (%)	Self-study (%)
			100	
Description	<p>In the Business project students of different nationalities and fields of study together found and run a company for a year to break it up in the end. A Dutch foundation that encourages entrepreneurship, provides an official legal framework, that allows the students to establish a company and to bring shares on the market in order to gain a starting capital. In the end they should be able to pay their shareholders back with some profit and also to keep some profit for themselves. The studies in concern are economics, informatics and engineering. Although there are more nationalities involved, the most frequent nationalities are the Dutch and the German. Since the students have different nationalities, the spoken and written language is compulsory English. The students contemplate a suitable product, have to develop a business plan, including a marketing and sales strategy and a production process. They produce and sell their product themselves on occasions of their own choice, e.g. Christmas fairs, open door days at school, in the streets etc. The students have to organize themselves in departments (e.g. human resources, general management) and appoint managers. In addition the students have to organize two shareholder meetings. The student group, typically 10 students is supported by one counselor from the university, an external entrepreneur and a financial specialist. The project runs over two semesters, after the first semester (BUS1) extensive feedback and an intermediate appraisal is given. After a year (BUS2) when results are finalized, a final mark is given.</p>			
Literature	Project Manual			
Classroom language	English			

Note: 1 credit = 28 working hours

4.2 Module BI/RENG

Title	Requirements engineering			
Code	RENG			
Credits	4			
Academic year	2011-2012			
Education type	Theory (%)	Practical (%)	Project (%)	Self-study (%)
	30	20		50
Description	<p>The student should understand the necessity of SMART requirements. He/she should be able to setup a set of: requirements that are: Correct, Unambiguous, Complete, Consistent, ranked for importance, verifiable, Modifiable, and Traceable. Several methods are used to create a good requirements document. Requirements tend to change overtime, when more insight is gathered. Students should be able to handle these changes.</p> <p>In this module requirements of different nature are in the centre of attention. Functional, but also non-functional requirements like performance or safety are handled. This module contains how requirements are retrieved, how they are documented and how they are managed.</p> <p>Specific topics are:</p> <ul style="list-style-type: none"> • Stakeholder analysis • Requirements specification and documentation • Requirements quality assurance (inspections and reviews) • Requirements evolution (change management, traceability, Change control) 			
Literature	A. v. Lamsweerde □ Requirements engineering (ch 1 – 6)			
Classroom language	English			

Note: 1 credit = 28 working hours

4.3 Module BI/ITSM

Title	IT Service management			
Code	ITSM			
Credits	5			
Academic year	2011-2012			
Education type	Theory (%)	Practical (%)	Project (%)	Self-study (%)
	30	20		50
Description	<p>Everywhere in organizations IT equipment (Hardware and software) is used. The design build and maintenance is done by the IT organization. IT Service management is about how to maintain an IT infrastructure. What processes should be in place and what tools can be used to support these processes. Also the way the IT organization is setup is part of this module.</p> <p>In this module the IT services are in the centre of the attention. The processes that support the efficient and effective ICT maintenance are elucidated. The module handles:</p> <ul style="list-style-type: none"> • IT Service management (definition and optimisation) • Organisations, processes and ICT • Methods: ITIL v3 			
Literature	All study materials will be delivered online			
Classroom language	English			

Note: 1 credit = 28 working hours

4.4 Module BI/COFI

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4.5 Module BI/ERP

Title	Enterprise Resource Planning			
Code	ERP			
Credits	7			
Academic year	2011-2012			
Education type	Theory (%)	Practical (%)	Project (%)	Self-study (%)
	25			75
Description	<p>The main purpose of this course is not to get acquainted with SAP in the first place, but to apply SAP as a learning environment to analyze business processes and the interdependencies between the process steps, which make up the business process. By executing the process steps, data will be stored in the database. To be able to understand the business process in 'full' detail, the use of the data tables that are applied in the process steps, will be analyzed. In this way, you will understand where the data values of a process step originate from and you will be able to understand the outcome of a process step.</p> <p>Not only techniques will be discussed, resulting in the tables, which are applied in a specific process step, these tables will also be applied to create reports. In creating the reports, the relevance of a thorough knowledge of the processes will be emphasized. It will turn out that a detailed understanding of the business processes, the use of the data tables by the business processes and the definitions of the data elements are a prerequisite for accurate reporting.</p>			
Literature	There will be 3 syllabi that the students have to buy at the multi media centre.			
Classroom language	English			

Note: 1 credit = 28 working hours

5 Semester 5: Work placement / Internship

5.1 Module SE/STG1

Title	Internship			
Author	DOS			
Code	STG1			
Credits	30			
Academic year	2012-2013			
Education type	Theory (%)	Practical (%)	Project (%)	Self-study (%)
		100		
Description	<p>The student will actually work in a company , foundation or governmental institution for half a year. The student himself has to find a suitable place to do his internship and has to apply for a position. In corporation with the company representative, he or she writes an internship assignment proposal. The company and the assignment proposal have to be approved by one of the lecturers in the university. If the assignment has been approved and the student fulfills all other conditions required to start his or her internship, he or she can start working on his or her internship assignment.</p> <p>A lecturer/counselor from the school will be appointed to the student in order to monitor and guide him in his work and also for judging him or her in the end. The lecturer /counselor will visit the student and the company representative on location on a regular basis.</p> <p>Main objective of this practical semester is to experience the working life in the profession the student is studying for. Another important objective off course is to learn about current working methods, methodologies, practices and technologies.</p>			
Literature	Internship/Graduation manual.			
Classroom language	Not applicable.			

Note: 1 credit = 28 working hours

6 Semester 6: Minor

6.1 Module SE/MINOR

Title	Minor (free choice)			
Author	HVD			
Code	MINOR			
Credits	30			
Academic year	2012-2013			
Education type	Theory (%)	Practical (%)	Project (%)	Self-study (%)
Description	<p>Besides some choice modules the bachelor program was fixed until 2005. The major minor model has been introduced in the academic year 2005-2006 to give the student more choice possibilities in his or her study program. Hence, in 2005 two minors of 30 EC and a major of 180 EC were introduced, that together constituted the bachelor program. In 2008 the second minor has been abandoned for practical reasons. Semester 7 was part of the major again, so the major was 210 EC from that time on, the minor of free choice remained 30 EC. Positioned in semester 6.</p> <p>At the time that two minors were in the bachelor program, we positioned the Software Factory, together with communication and two choice modules as a specializing minor. Reference codes: SOFA, COM3B, CMOD2 and CMOD2.</p> <p>In 2008 this combination returned in semester 7 as part of the major. Minors of free choice are chosen by the student from a catalogue with over 40 different minor programs. However, our students mostly have chosen for the minor Ambient Intelligence and design (reference code: AMID) or the International Business Management (reference code: IBMS). In addition students have chosen for a minor abroad, mostly specializing minors at foreign universities (US, Australia, New Sea land, Norway). Due to the great variety in the minors offered, it is not possible to make general statements concerning contents, literature, classroom language and education type. Most minors are described in so called diploma supplements.</p>			
Literature	Not applicable.			
Classroom language	Not applicable.			

Note: 1 credit = 28 working hours

6.2 Module SE/AMID

Title	Minor Ambient Intelligence and Design			
Author	HVD/DOS			
Code	AMID			
Credits	30			
Academic year	2012-2013			
Education type	Theory (EC)	Practical (EC)	Project (EC)	Self-study (EC)
	12	6	12	
Description	<p>The student acquires knowledge in the field of ambient intelligence, application design and its social implications. The official language used in this course is English.</p> <p>The student is able to:</p> <ul style="list-style-type: none"> • Write a paper about an ambient intelligence subject; • Build a wireless sensor actuator network by means of Arduino Xbee hardware; • Build a small image processing application in MAX-MSP and OpenCV; • Implement a face recognition Java application based on the theory of principle component analysis; • Implement image processing algorithms in Java, e.g. pixel operations, object detection, feature extraction; • Apply different machine learning concepts, such as: statistical modeling, covering rules, association rules, reinforcement learning, instance based learning, clustering, linear models and classification; • Implement an ID3 algorithm, Q-learning algorithm, 2 input - 2 layer – 1 output multilevel perceptron; • Build and program a Lego robot for experimenting with reinforcement learning algorithms, where the robot should be able to learn some predefined behavior; • Work as a team member in a project to realize a prototype of an ambient concept. The deliverables of this project are: poster presentation, live demo of different scenarios, video presentation, software repository, handover document. 			
Literature				
Classroom language	English			

Note: 1 credit = 28 working hours

7 Semester 7: Advanced BI Topics III

7.1 Module SE/COM3

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7.2 Module SE/SOFA

Title	Software Factories			
Code	SOFA			
Credits	18			
Academic year	2013-2014			
Education type	Theory (%)	Practical (%)	Project (%)	Self-study (%)
			100%	
Description	<p>“Software factories” is the last project type module in the curriculum. To make it as real life as possible, a real customer is involved. The students work in groups, each group having its own customer and is using product specific technologies. The students take up different project roles which are separately rewarded. The module is concluded with at least one product presentation to the customer and an individual assessment for each student. All documentation is done in English.</p>			
Literature	Sommerville, Software Engineering.			
Classroom language	English, German, Dutch.			

Note: 1 credit = 28 working hours

7.3 Module SE/CMOD1

Title	Choice Module 1			
Code	CMOD1			
Credits	5			
Academic year	2013-2014			
Education type	Theory (%)	Practical (%)	Project (%)	Self-study (%)
Description	In 2011-2012 the following choice module was programmed and performed: Reference codes: EMBED			
Literature				
Classroom language				

Note: 1 credit = 28 working hours

7.4 Module SE/CMOD2

Title	Choice Module 2			
Code	CMOD2			
Credits	5			
Academic year	2013-2014			
Education type	Theory (%)	Practical (%)	Project (%)	Self-study (%)
Description	In 2011-2012 the following choice module was programmed and performed: Reference codes: JEE			
Literature				
Classroom language				

Note: 1 credit = 28 working hours

7.5 Module SE/JEE

Title	Java Enterprise Edition			
Code	CMOD2			
Credits	5			
Academic year	2013-2014			
Education type	Theory (%)	Practical (%)	Project (%)	Self-study (%)
	15	35		50
Description	Students gain basic knowledge of essential features and technologies that are part of the Java Enterprise Edition. Important concepts will be presented and exercised during practical work in the computer laboratories. The students know how to develop, execute and test within a professional development environment. The following topics/technologies will be covered within the module: Enterprise Java Beans 3.0, Architectural Patterns, Development and Deployment of JEE Applications, Basic Application Server configuration			
Literature	B. Burke, R. MonsonHaefel: Enterprise JavaBeans 3.0			
	R. Rahman, D. Lane: EJB3 in action			
	JSR EJB 3.0, http://jcp.org/en/jsr/detail?id=220			
Classroom language	English			

Note: 1 credit = 28 working hours

8 Semester 8: Bachelor Project

8.1 Module SE/STG2

Title	Graduation			
Code	STG2			
Credits	30			
Academic year	2013-2014			
Education type	Theory (%)	Practical (%)	Project (%)	Self-study (%)
		100		
Description	<p>The student will actually work in a company , foundation or governmental institution for half a year. The student himself has to find a suitable place to do his graduation assignment and has to apply for a position. In corporation with the company representative, he or she writes an graduation assignment proposal. The company and the assignment proposal have to be approved by one of the lecturers in the university. If the assignment has been approved and the student fulfills all other conditions required to start his or her graduation project, he or she can start.</p> <p>A lecturer/counselor from the school will be appointed to the student in order to monitor and guide him in his work and also for judging him or her in the end. In addition another – independent - representative is appointed to guarantee a certain level of work and an object judging process. The lecturer /counselor will visit the student and the company representative on location on a regular basis.</p> <p>Main objective of this graduation semester is that the student – in a final assessment - proves that he is able to work as a professional in a company or other institution. He or she is encouraged to clearly show all talents and competencies, including reporting and presenting about his or her work. The student has to defend his work in the end for the lecturer / counselor, external representative and company representatives. Another important objective off course is to learn about current working methods, methodologies, practices and technologies.</p>			
Literature	Not applicable.			
Classroom language	Not applicable.			

Note: 1 credit = 28 working hours