Univerza v Novem mestu
University of Novo mesto

CLEAN COPY OF THE HIGHER EDUCATION PROFESSIONAL STUDY PROGRAMME

1st CYCLE

BUSINESS INFORMATICS,

implemented by University of Novo mesto Faculty of Economics and Informatics

Novo mesto, November 2014
(change of the intended course of teaching – January 2022)

TABLE OF CONTENTS

I GENERAL INFORMATION ABOUT THE PROGRAMME

Study Programme:	Business Informatics
Cycle:	first
Type:	higher education professional study programme
Duration:	3 years
ECTS amount:	180 ECTS
Klasius P-16:	0488 - Interdisciplinary programmes and qualifications involving business, administration and law 0613 – Development and analysis of software and applications
Research area (Frascati classification):	social sciences natural sciences
SOK (Slovene classification framework)	level 7
EOK (European classification framework)	level 6
EOVK (European higher education classification framework)	first cycle
Accreditation:	NAKVIS, decision No. 6033-51/2013/15 on 16 October 2014

In the development of the higher education professional study programme at the first cycle *Business Informatics*, we consistently considered the following documents:

- Higher Education Act,
- Law on Professional and Scientific Titles,
- Criteria on Accreditation of Higher Education Institutions and Study Programmes,
- Criteria for Credit Assignment to Study Programmes According to ECTS.

2 FUNDAMENTAL OBJECTIVES AND COMPETENCES

Operation of economic and non-economic entities and state administration is changing significantly with the development of information technology (IT). The impact of IT is reflected in organizational changes of institutions, in different implementations of information systems, and consequently in changed functioning and communication within institutions as well as between them and the environment. Such transformation requires new knowledge and new people who have such knowledge.

The fundamental objective of the higher education professional study programme at the first cycle *Business Informatics* is to offer management and business knowledge as well as computer science and IT, so that all the necessary changes that IT implies can be competently and professionally implemented at the level of institutions that decide to make the necessary transformation.

2.1 Fundamental objectives of the study programme

The basic goals of the study programme *Business Informatics* in both study fields enable students to acquire expertise and qualifications for:

- direct employment after their studies;
- competent work in the fields of management and business, and computer and information science,
- continuation of their studies at the second cycle and participation in supplementary programmes,
- permanent professional and personal growth,
- understanding of the global professional, political, social and cultural environment.

The goals of the *Business Informatics* study field are:

- achieve a comprehensive set of management and business knowledge and skills,
- develop the ability to solve practical problems in the field of business informatics,
- develop the ability and knowledge to successfully cope with change and one's own career, promoting flexibility, critical thinking, presentation skills, teamwork and the integration of theoretical knowledge,
- application of expertise in the operation of each organization and environment,
- ability to plan, organize, manage and control the required functions.

The goals of the *Computer and Information Science* study field are:

- contribute to a deeper understanding of modern computer science and informatics,
- develop the ability to solve practical problems in the field of computer science and informatics,
- train students to keep up with technological change,
- educate students to use modern tools and techniques in solving and presenting problems and concepts,
- develop the ability to master programming languages, techniques, development tools and methodologies for system development,
- develop the ability to handle complex problems,
- develop a sense of identification and use of relevant computer skills in a given situation,
- develop a positive attitude towards a further acquiring of computer and information skills in solving various problems,
- develop a sense of teamwork and teamwork in problem solving.

The study leads to the acquisition of a wide range of knowledge and skills in the field of business informatics, computer and information sciences, and management and business, as well as computer and information science. Developing the ability and knowledge to successfully manage change and one's own career is crucial, while fostering flexibility, critical thinking, presentation skills, teamwork and the integration of theoretical knowledge. Upon graduation, the graduates will master the knowledge in their field of work and will be able to apply it in the work of each organization and its environment. Based on a holistic and interdisciplinary knowledge of the fields of activity, the graduates will be qualified to plan, organize, manage and control the required functions.

2.2 Professional competences

In designing competences for higher education professional study programme at the first cycle *Business Informatics* we relied on the orientations of the Tuning project, taking into account the assessments and opinions of economists and higher education teachers.

Students attending the higher education professional study programme at the first cycle *Business Informatics*, will acquire and develop the following general and course-specific competences.

General competences

Students will develop the following general competences through the study field *Business Informatics*:

- knowledge and understanding of processes in the business environment and the ability to analyse, synthesise and envisage solutions or consequences,
- being qualified for research in the field of management and business and informatics and computer science,
- the ability to plan organizational and information changes required to implement, apply and ensure quality in all areas of work within institutions,
- the ability to independently and autonomously use, control and maintain software for the realization of organizational and information functions,
- the ability to master information technology at all levels of software transformation,
- developing communication abilities and skills in the professional environment (domestic and international),
- being qualified for team and project work,
- ethical reflection and commitment to professional ethics in the business environment, respect for non-discrimination and multiculturalism in the organization and its (international) environment,
- the ability to establish and maintain partner relationship with colleagues, the employer and other users / groups (local community, advisory services, economy, etc.) as well as to hold a tolerant dialogue,
- knowledge and understanding of the developmental aspirations, differences and needs of the individual, as well as competence for permanent and lifelong education.

Students will develop the following general competences through the study field *Computer and Information Science*:

- ability to gain a thorough understanding of computer science and informatics,
- knowledge and understanding of processes in the technical, technological and business environment, and the ability to analyze, synthesize and anticipate solutions and their consequences,
- competence for independent and autonomous use, control and maintenance of hardware and software for the realization of business-organizational and technical-technological computer-information functions,
- ability to define, understand and creatively solve professional challenges in the field of computer science and informatics,
- ability to constantly monitor and evaluate developments in the field of computer science and informatics,
- ability to acquire new and deepen the acquired competences of computer science and informatics,
- ability to use the acquired knowledge in independent solving of professional problems in computer science and informatics for successful integration in work processes in economy and non-economy,

- competence for team and project work,
- ability to develop communication skills and skills in the domestic and international environment,
- developing a professional identity, professional responsibility and ethics.

Course-specific competences

Students in both study fields will develop the following course-specific competences:

1. *Business Informatics*:

- understanding basic knowledge, mastering skills and integrating both fields of management and business, as well as computer and information science,
- understanding and using methods of critical analysis and theory development, using them in solving concrete work-related problems,
- knowledge and understanding of the history, rationale and general structure of the core disciplines, their sub-disciplines in the fields of business and management sciences, and informatics and computer science,
- coherent mastery of basic knowledge from both fields of study and the ability to integrate and apply it in practice,
- the ability to independently use, develop and maintain information and communication technology and systems in the field of management and business,
- knowledge of the way information is presented, recorded and modelled,
- the ability to write the problem in the form of an algorithm,
- the ability for system planning,
- the ability for development of software,
- understanding of computer systems and architectures,
- understanding, use and development of computer communications,
- knowledge of IT capabilities and limitations,
- the ability to plan and manage changes, to develop organizational and leadership skills, mentorship, advisory work, reviewing and evaluating employee achievement, and creating feedback,
- the ability for self-education, selection of new information and their integration into the work process,
- understanding the needs of the individual or groups by considering environmental factors (physical, social, cultural).

2. *Computer and Information Science*:

- basic and applied competences in the field of computer science and informatics, which includes basic theoretical and practical knowledge essential for modern computer science and informatics,
- ability to analyze and design systems,
- knowledge of ways to present, record and model information,
- ability to describe a given situation with the correct use of mathematical and computer symbols and notations,
- ability to install, maintain and service information and communication equipment,
- ability to analyze and develop hardware and software,
- knowledge of information technology capabilities and limitations,
- understanding and ability to apply computer and information skills in various fields of engineering and other professionally relevant fields (economics, business, organizational sciences, etc.),

- practical knowledge and skills in the development of software and hardware, and information technologies necessary for successful work in the professional field of computer science and computer science (programming, computer architecture, networks, etc.),
- ability to provide advice and technical support to ICT users,
- training users in the field of ICT.

3 INFORMATION ABOUT THE INTERNATIONAL COMPARABILITY OF THE PROGRAMME

In designing a study on the international comparability of the higher education professional study programme at the first cycle *Business Informatics* with other related study programmes, in accordance with Article 49 of the Higher Education Act and Article 8 of the Criteria for Accreditation of Higher Education Institutions and Study Programmes, we considered the following criteria:

- comparability of concept, formal and content structure of the *Business Informatics* programme with foreign programmes,
- comparability of access opportunities and conditions for enrolment in the study programme;
- comparability of the duration of the study, advancements, completion of the study and acquired titles,
- comparability of methods and forms of study (system and organisation of the study process, the credit system, the use of modern information technologies, an independent study, tutoring, organization of practical training),
- options for integrating the programme in international cooperation (mobility), or the common European Higher Education Area,
- differences between the proposed and foreign programs according to the specific needs and conditions of the domestic economy and public services,

In order to analyse the international comparability of the higher education professional study programme at the first cycle *Business Informatics*, we examined various related study programs in the European Higher Education Area. After consideration, we have selected four European study programs in the field of business and management sciences, and computer science and informatics which are in line with the Bologna guidelines, and are carried out at internationally recognized and high quality higher education institutions with tradition.

Thus, for the study of international comparability, we have included related study programmes from the following higher education institutions: Technische Universität München (TUM), Germany; Universität Zürich (UZ), Switzerland; University of Ulster, Faculty of Business and Management (UU), Northern Ireland; Technische Universitat Wien (UW), Austria.

Table 1: The list of comparable higher education institutions and study programmes

Higher education institution	*Study programme*	*Country*	*Institution's website*
Technische Universität München (TUM)	Wirtschaftsinformatik	Germany	www.tu-muenchen.de
Universität Zürich (UZ)	Science in Informatik, Richtung Wirtschaftsinformatik	Switzerland	*www.unizh.ch*
University of Ulster Faculty of Business and Management (UU)	*Business Studies with Computing*	Northern Ireland	*http://www.ulster.ac.uk*
Technische Universitat Wien (UW)	*Wirtschaftsinformatik*	Austria	*www.tuwien.ac.at*

A study of international comparability has shown that the higher education professional study programme at the first cycle *Business Informatics* is internationally comparable and facilitates international mobility and integration into the European higher education area.

4 INTERNATIONAL COOPERATION OF THE HIGHER EDUCATION INSTITUTION

The Faculty develops its international activity in five areas, which are:

- organization of international scientific conferences,
- international exchange of students and higher education teachers/staff,
- Participation in international scientific-research projects:
- collaboration in developing joint study programmes,
- individual contacts of the higher education teachers.

5 CURRICULUM OF THE STUDY PROGRAMME

Higher education professional study programme at the first cycle *Business Informatics* covers the content areas of business informatics, computer and information science, and business and management sciences. The Bologna Declaration's recommendations regarding the duration of the study, annual workload of students, electivity, credit evaluation of the study programmes and international mobility, including the provisions of the Higher Education Act and by-laws are consistently taken into account in designing courses.

5.1 Credit evaluation of the programme and individual learning units

The higher education professional study programme at the first cycle *Business Informatics* is evaluated with ECTS in accordance with the European Credit Transfer and Accumulation System (ECTS) framework. The ECTS system enables students to collect and transfer the credit points from one study programme to another as well as recognition of accomplished studies on other institutes of higher education in Slovenia and abroad. It ensures transparency and comparability of systems and study programmes, which is fundamental for mobility of students and recognition of study obligations.

A credit point (ECTS) is a unit of measurement for the evaluation of work, which is performed by a student on the average. In the scope of the study programme *Business Informatics* the student is expected to complete 4410 hours, which is an average of 25

hours per one ECTS and applies to all forms of study work except professional training, where 40 hours of work (one week) is 2 ECTS.

The ECTS Criteria encourage the introduction of teaching strategies that focus on students: the starting point is the workload of a student. The credit points are awarded to the student when the prescribed study obligations are accomplished. The students' workload comprises: lectures, tutorials and laboratory work as well as other forms of organized study work (professional practice), individual study work (real-time work, literature studies, seminar papers and preparation for exams or other forms of knowledge assessment) and diploma paper or. final seminar in parts of the study programme.

The actual individual student workload is monitored and evaluated in concordance with the Article 5 of the ECTS Criteria. The findings are an integral part of the annual self-evaluation report.

5.2 Curriculum with names of individual learning units

Tables 2 and 3 show for each of the study fields: the curriculum with the named learning units, credit evaluation of the complete programme and individual learning units, annual or total number of hours of study obligations, as well as the annual and total number of organised contact hours of the programme.

Study field Business Informatics

Table 2: Curriculum of the study field *Business Informatics* with ECTS (credit points) values of individual study obligations

No.	Learning units	OSW winter semester L	T	LW	PT	OSW summer semester L	T	LW	PT	OSW	ISW	ASW	ECTS
Year 1													
1.	**Fundamentals of Computer and Information Science**	45	15							90	85	175	7
2.	Applied Mathematics	30	60							90	85	175	7
3.	Professional Foreign language	15	45							60	65	125	5
4.	**Programming 1**	45		45						90	85	175	7
5.	**Computer Technologies**	30	15	30						75	25	100	4
6.	**Programming 2**					45		45		90	85	175	7
7.	**Operating Systems**					45		45		90	85	175	7
8.	**Fundamentals of Information Systems**					30		45		75	75	150	6
9.	**Databases I**					30		45		75	75	150	6
10.	**E-Learning**					30	30			60	40	100	4
TOTAL		**165**	**135**	**105**	**0**	**180**	**30**	**180**	**0**	**795**	**705**	**1500**	**60**
Year 2													
1.	Corporate Finance	30	45							75	75	150	6
2.	**Algorithms and Data Structures**	45		45						90	85	175	7
3.	Management Fundamentals	30	30							60	65	125	5
4.	Business Communication	30	45							75	75	150	6
5.	**Web Technologies**	30		30						60	90	150	6
6.	Accounting					45	45	15		105	70	175	7
7.	Business Statistics					30	45	15		90	85	175	7
8.	Marketing					30	30			60	90	150	6
9.	**Web Computing**					30		30		60	40	100	4
10.	Elective course 1					30		30*		60	90	150	6
TOTAL		**165**	**120**	**75**	**0**	**165**	**120**	**90**	**0**	**735**	**765**	**1500**	**60**
Year 3													
1.	**Development and Management of Information Systems**	30		30						60	90	150	6
2.	MODULE: Course 1	30		30*						60	90	150	6
3.	Course 2	30		30*						60	90	150	6
4.	Course 3	30		30*						60	90	150	6
5.	Elective course 2	30		30*						60	90	150	6
6.	Human Resource Management					30	45			75	75	150	6
7.	Professional Training								360	360	0	360	18
8.	Diploma Thesis						15			15	135	150	6
TOTAL		**150**	**0**	**150**	**0**	**30**	**60**	**0**	**360**	**750**	**660**	**1410**	**60**

Note:

L - lectures, T - tutorials, LW – laboratory work, PT = professional training, OSW – organised study work, ISW – individual student work, ASW – annual student workload, ECTS = European Credit Transfer System points.

* elective courses and module subjects T or LW are possible, as can be seen in the syllabus

Year of study	OSW L	T	LW	PT	OSW	ISW	ASW	ECTS
year 1	345	165	285	0	795	705	1500	60
year 2	330	240	165	0	735	765	1500	60
year 3	180	60	150	360	750	660	1410	60
TOTAL in hours	**855**	**465**	**600**	**360**	**2280**	**2130**	**4410**	**180**
TOTAL IN %	**19,4**	**10,5**	**13,6**	**8,2**	**51,7**	**48,3**	**100,0**	

Study field Computer and Information Science

Table 3: Curriculum of the study field *Computer and Information Science* with ECTS (credit points) values of individual study obligations

No.	Learning units	OSW winter semester L	T	LW	PT	OSW summer semester L	T	LW	PT	OSW	ISW	ASW	ECTS
Year 1													
1.	**Fundamentals of Computer and Information Science**	45	15							90	85	175	7
2.	Applied Mathematics	30	60							90	85	175	7
3.	Professional Foreign language	15	45							60	65	125	5
4.	**Programming 1**	45		45						90	85	175	7
5.	**Computer Technologies**	30	15	30						75	25	100	4
6.	**Programming 2**					45		45		90	85	175	7
7.	**Operating Systems**					45		45		90	85	175	7
8.	**Fundamentals of Information Systems**					30		45		75	75	150	6
9.	**Databases I**					30		45		75	75	150	6
10.	**E-Learning**					30	30			60	40	100	4
TOTAL		**165**	**135**	**105**	**0**	**180**	**30**	**180**	**0**	**795**	**705**	**1500**	**60**
Year 2													
1.	**Multimedia**	30		45						75	75	150	6
2.	**Algorithms and Data Structures**	45		45						90	85	175	7
3.	**Human - Computer Interaction**	30	30							60	65	125	5
4.	Business Communication	30	45							75	75	150	6
5.	**Web Technologies**	30		30						60	90	150	6
6.	**Foundations of Intelligent Systems**					30		30		60	90	150	6
7.	**Security of Computer Systems**					30		30		60	90	150	6
8.	**Business Process Renovation and Informatisation**					30		30		60	90	150	6
9.	**Theory of Information and Systems**					30	30			60	90	100	6
10.	Elective course 1					30		30*		60	90	150	6
TOTAL		**165**	**75**	**120**	**0**	**150**	**30**	**120**	**0**	**660**	**840**	**1500**	**60**
Year 3													
1.	**Development and Management of Information Systems**	30		30						60	90	150	6
2.	MODULE: Course 1	30		30*						60	90	150	6
3.	Course 2	30		30*						60	90	150	6
4.	Course 3	30		30*						60	90	150	6
5.	Elective course 2	30		30*						60	90	150	6
6.	**Digitalization of Business Processes**					30		30		60	90	150	6
7.	Professional Training								360	360	0	360	18
8.	Diploma Thesis						15			15	135	150	6
TOTAL		**150**	**0**	**150**	**0**	**30**	**15**	**30**	**360**	**735**	**675**	**1410**	**60**

Note:

L - lectures, T - tutorials, LW – laboratory work, PT = professional training, OSW – organised study work, ISW – individual student work, ASW – annual student workload, ECTS = European Credit Transfer System points.

* elective courses and module subjects T or LW are possible, as can be seen in the syllabus

Year of study	OSW L	T	LW	PT	OSW	ISW	ASW	ECTS
year 1	345	165	285	0	795	705	1500	60
year 2	315	105	240	0	660	840	1500	60
year 3	180	15	180	360	735	675	1410	60
TOTAL in hours	**840**	**285**	**705**	**360**	**2190**	**2220**	**4410**	**180**
TOTAL IN %	**19,0**	**6,5**	**16,0**	**8,2**	**49,7**	**50,3**	**100,0**	

5.3 Learning units and their inclusion in the programme structure

The programme consists of 180 credit points. The study programme includes organised work and individual study work, which is 4410 hours. It lasts for three academic years. It is formed of 21 common obligatory courses, 2 elective courses, 3 elective module courses, professional training and diploma thesis.
The learning units are implemented as *organised study work* and include lectures, tutorials, laboratory work, and professional training.

Individual study work consists of ongoing work, studying literature, seminar, research and project papers, as well as preparing for exams and writing a diploma thesis. It comprises 2130 hours or 48.3% in the study field *Business Informatics*, and 2220 hours or 50.3% in the study field *Computer and Information Science.*

The study field *Business Informatics* includes learning units of two scientific disciplines: business sciences and informatics. The ratio between the two areas is most evident in the ratio between compulsory common learning units, with the field of business sciences accounting for 55 ECTS or 30,6% and the field of informatics 71 ECTS or 39,4%. With the elective part of the programme, 54 ECTS or 30%, the student can choose between learning units of one field or another, thus deciding the final relationship between the two scientific disciplines in their curriculum.

Table 4: Structure of the study field *Business Informatics* according to the content areas, in ECTS

Year	*Structure of the programme*	*Number of learning units*	*Business Sciences*		*Informatics*		*TOTAL IN ECTS*	*Share in %*
			Number of learning units	*in ECTS*	*Number of learning units*	*in ECTS*		
1.	Common course	10	2	12	8	48	60	33,3
2.	Common course	9	6	37	3	17	54	30,0
	Elective course	1					6	3,3
3.	Common course	2	1	6	1	6	12	6,7
	Module course	3					18	10,0
	Elective course	1					6	3,3
	Professional Training	1					18	10,0
	Diploma Thesis	1					6	3,3
TOTAL		**28**	**9**	**55**	**12**	**71**	**180**	**100,0**
Share of ECTS in %				**30,6**		**39,4**		

The study field *Computer and Information Science* includes learning units of two scientific disciplines: business sciences and computing. The ratio between the two areas is most evident in the ratio between compulsory common learning units, with the field of business sciences accounting for 18 ECTS or 10.0% and the field of computing 108 ECTS or 60.0%. With the elective part of the programme, 54 ECTS or 30%, the student can choose between learning units of one field or another, thus deciding the final relationship between the two scientific disciplines in their curriculum.

Table 5: Structure of the study field *Computer and Information Science* according to the content areas, in ECTS

Year	*Structure of the programme*	*Number of learning units*	*Business Sciences*		*Computer Sciences*		*TOTAL IN ECTS*	*Share in %*
			Number of learning units	*in ECTS*	*Number of learning units*	*in ECTS*		
1.	Common course	10	2	12	8	48	60	33,3
2.	Common course	9	1	6	8	48	54	30,0
	Elective course	1					6	3,3
3.	Common course	2	0	0	2	12	12	6,7
	Module course	3					18	10,0
	Elective course	1					6	3,3
	Professional Training	1					18	10,0
	Diploma Thesis	1					6	3,3
TOTAL		**28**	**3**	**18**	**18**	**108**	**180**	**100,0**
Share of ECTS in %				**10,0**		**60,0**		

5.3.1 Electiveness within the study programme

The relations between obligatory and elective units in the higher education professional study programme *Business Informatics* are defined in accordance with Article 6 of the Criteria for Credit Assignment to Study Programmes According to ECTS, taking into account the characteristics of the study/research field, the cycle and type of the study programme (interdisciplinary) and its internal sections.

The percentage of elective units of the programme and the number of ECTS acquired by the student through internal selection, or in other study programs are determined. According to the ECTS Criteria, students have the opportunity to bring at least 10 ECTS credits from any study programme.

Elective section of the programme:
- elective module, comprising three learning units (18 ECTS),
- elective courses, comprising two learning units (12 ECTS),
- professional training (18 ECTS),
- diploma thesis (6 ECTS).

5.3.2 Elective modules of the programme

The programme consists of three elective modules: two in the area of informatics and one in the area of business sciences in the field of *Business Informatics*, and all three in the area of computer and information science in the field of *Computer and Information Science*.
Each module consists of three courses (18 ECTS), which are rounded off in whole subject areas and therefore suitable for independent implementation within the parts of the study programme. They are an upgrade of the basic knowledge of compulsory subjects of the first and second year. Students select a module according to their interests, as well as according to the needs of their work.

Table 6: Elective modules in the study field *Business Informatics*

No.	Learning unit	OSW			OSW	ISW	ASW	ECTS
		L	T	LW				
Module 1: INFORMATION SYSTEMS								
1.	Databases II	30		30	60	90	150	6
2.	Business Analysis and Information Systems Modelling	30	30		60	90	150	6
3.	IT Management	30	30		60	90	150	6
Module 2: E - BUSINESS								
1.	E-Business	30		30	60	90	150	6
2.	Analysis and Planning of Web Applications	30		30	60	90	150	6
3.	Information Security Policies	30		30	60	90	150	6
Module 3: HUMAN RESOURCES								
1.	Employment Policy	30	30		60	90	150	6
2.	Labour Law	30	30		60	90	150	6
3.	Business Ethics	30	30		60	90	150	6

Table 7: Elective modules in the study field *Computer and Information Science*

No.	Learning unit	OSW			OSW	ISW	ASW	ECTS
		L	T	LW				
Module 1: INFORMATION SYSTEMS								
1.	Databases II	30		30	60	90	150	6
2.	Business Analysis and Information Systems Modelling	30	30		60	90	150	6
3.	IT Management	30	30		60	90	150	6
Module 2: E - BUSINESS								
1.	E-Business	30		30	60	90	150	6
2.	Analysis and Planning of Web Applications	30		30	60	90	150	6
3.	Information Security Policies	30		30	60	90	150	6
Module 3: ARTIFICIAL INTELLIGENCE								
1.	Agent-Based Modelling and Agent Systems	30	30		60	90	150	6
2.	Knowledge Technologies	30	30		60	90	150	6
3.	Soft Computing and Natural Algorithms	30	30		60	90	150	6

5.3.3 Elective courses of the programme

Elective courses allow students to plan their studies according to their individual needs. The programme enables selection in the second and third year. Students select from a range of elective subjects in the field of business sciences, business informatics and computer science and informatics (internal choice) and from the programme at the first cycle of tertiary education in Slovenia or abroad, with which the Faculty has an agreement.

Table 8: Elective courses in the field *Business Informatics*

No.	Learning unit	OSW			OSW	ISW	ASW	ECTS
		L	T	LW				
1.	Mobile Technologies	30		30	60	90	150	6
2.	Software Engineering	30		30	60	90	150	6
3.	Introduction to Cognitive Science	30	30		60	90	150	6
4.	Legal Framework of Business Operations	30	30		60	90	150	6
5.	Project Management	30		30	60	90	150	6
6.	Business Process Modelling and Analysis	30		30	60	90	150	6
7.	Rhetoric	30	30		60	90	150	6

Table 9: Elective courses in the field *Computer and Information Science*

No.	Learning unit	OSW			OSW	ISW	ASW	ECTS
		L	T	LW				
1.	Mobile Technologies	30		30	60	90	150	6
2.	Software Engineering	30		30	60	90	150	6
3.	Introduction to Cognitive Science	30	30		60	90	150	6
4.	Legal Framework of Business Operations	30	30		60	90	150	6
5.	Project Management	30		30	60	90	150	6
6.	Business Process Modelling and Analysis	30		30	60	90	150	6

5.3.3 Electiveness within the study programme

The study programme lasts for three academic years, i.e. six semesters. The first year consists of 10 common courses. The second year comprises 9 common study courses (54 ECTS) and one elective course (6 ECTS). The third year consists of: two common courses (12 ECTS), the elective module with three courses (18 ECTS), one elective course (6 ECTS), professional training (18 ECTS) and diploma thesis (6 ECTS).

Table 10: Structure of the programme according to electiveness in ECTS and %

Structure of the programme	*Learning unit*	*Number of learning units*	*Business Sciences*		*Informatics / Computing*		*TOTAL IN ECTS*	*Share in %*
			Number of learning units	*in ECTS*	*Number of learning units*	*in ECTS*		
Common section of the programme	Common course - – study field BI	21	9	55	12	71	**126**	**70,0**
	Common course - – study field CIS	21	3	18	18	108	**126**	**70,0**
Elective section of the programme	Module course	3					18	10,0
	Elective course	2					12	6,7
	Professional Training	1					18	10,0
	Diploma Thesis	1					6	3,3
	Total						**54**	**30,0**
TOTAL – study field BI		**28**	**9**	**55**	**12**	**71**	**180**	**100,0**
Share of ECTS in %				**30,6**		**39,4**		
TOTAL – study field CIS		**28**	**3**	**18**	**18**	**108**	**180**	**100,0**
Share of ECTS in %				**10,0**		**60,0**		

Common section of the programme includes 21 study courses in the scope of 126 ECTS or 70%, enabling the acquisition of basic knowledge, the development of general and subject-specific competences of the graduate.

Elective section of the programme enables students to realise their own academic pathways. Planning of an individual study programme involves the possibility of internal and external selection. Selection is available at the following learning units: elective module, elective courses, professional training and diploma thesis.

In the scope of *internal selection* the student can collect 54 ECTS or 30% of the programme, namely:

- module covering three study courses in the range of 18 ECTS or 10% of the programme;
- two elective courses in the range of 12 ECTS or 6.7% of the programme;
- professional training in the range of 18 ECTS or 10% of the programme;
- diploma thesis in the range of 6 ECTS or 3.3% of the programme;

5.4 The ratio of lectures, seminars, tutorials and other organised forms of study

In accordance with the ECTS Criteria, annual student workload (AWS) consists of: organized study work (lectures, tutorials and laboratory work, professional training) and individual study work (ongoing work, studying literature, seminar, project and research papers, and preparing for exams or other forms of examinations), as well as preparation and defence of the diploma thesis.

Table 11: The ratio of lectures, seminars, tutorials and other organised forms in the study field *Business Informatics*

Year of study	OSW							ECTS
	L	T	LW	PT	OSW	ISW	ASW	
year 1	345	165	285	0	795	705	1500	60
year 2	330	240	165	0	735	765	1500	60
year 3	180	60	150	360	750	660	1410	60
TOTAL in hours	**855**	**465**	**600**	**360**	**2280**	**2130**	**4410**	**180**
TOTAL IN %	**19,4**	**10,5**	**13,6**	**8,2**	**51,7**	**48,3**	**100,0**	

In three years, the student is expected to complete 4410 hours, of which 2280 hours or 51.7% of organized study work and 2130 hours or 48.3% of individual student work. Organized study work is carried out in the form of lectures (19.4%), tutorials (10.5%), laboratory work (13.6%) and professional training (8.2%).

Table 12: The ratio of lectures, seminars, tutorials and other organised forms in the study field *Computer and Information Science*

Year of study	OSW							ECTS
	L	T	LW	PT	OSW	ISW	ASW	
year 1	345	165	285	0	795	705	1500	60
year 2	315	105	240	0	660	840	1500	60
year 3	180	15	180	360	735	675	1410	60
TOTAL in hours	**840**	**285**	**705**	**360**	**2190**	**2220**	**4410**	**180**
TOTAL IN %	**19,0**	**6,5**	**16,0**	**8,2**	**49,7**	**50,3**	**100,0**	

In three years, the student is expected to complete 4410 hours, of which 2190 hours or 49.7% of organized study work and 2220 hours or 50.3% of individual student work. Organized study work is carried out in the form of lectures (19.0%), tutorials (6.5%), laboratory work (16.0%) and professional training (8.2%).

5.5 Practical training within the programme, implementation and ECTS

Elements of practical training as an extremely important part of the educational process are tutorials, laboratory work, professional practice in a work environment and diploma thesis.

Tutorials are organized in the form of group work, where the participants solve a concrete problem by applying the knowledge and procedures gained in the lectures and through independent individual study. In concordance with the syllabus of the individual learning unit, they individually or in a team prepare a seminar paper in written form, present it and defend it.

Laboratory work is an individual reinforcement and assessment of understanding of the knowledge gained in theoretical training, which is related to the mastery of individual subject areas by solving specific tasks.

Professional training in terms of content and level of complexity is in line with the achieved level of theoretical knowledge. It is performed in the work environment in economic, non-economic entities, institutions or state bodies. It is managed, supervised and directed, trains students to solve concrete problems in a real-world environment. After completing the professional training, the student prepares a report in a predetermined format, which is reviewed by the mentor and evaluated by the organizer of the professional training at the faculty. The course and organization of professional training is more precisely foreseen in the Rules on the implementation of professional training, and the content is contained in the syllabus.

Diploma thesis is a comprehensive and complex professional discussion of the solution of a specific problem of business practice and should be the result of the individual work of the candidate in the range of 2-3 copyright fields. The candidate demonstrates that he / she is able to solve a professional practical problem based on the knowledge he / she has acquired through his / her study programme, through independent study of literature and resources, and through professional training.
The procedure and manner of preparation and defence of the diploma thesis are defined in the Rules and in the Manual for writing.

5.6 Parts of the study programme

In accordance with the Article 36 of the Higher Education Act, study programmes at the first and second cycle may be carried out in parts, specified by the programme. Each defined part of the study programme represents a substantially rounded whole of learning units from the study programme.

Higher education professional study programme at the first cycle *Business Informatics* comprises the following parts of the study programme:

- *Information Systems,*
- *E – business,*
- *Human Resources,*
- *Artificial Intelligence.*

The mentioned parts of the programme are carried out according to the curriculum, shown in the table below.

Table 13: Learning units of the part of the study programme

No.	*Learning unit*	*OSW*			*OSW*	*ISW*	*ASW*	*ECTS*
		L	*T/LW*	*PT*				
1.	MODULE: Course 1	30	30		60	90	150	6
2.	Course 2	30	30		60	90	150	6
3.	Course 3	30	30		60	90	150	6
4.	Elective course 1	30	30		60	90	150	6
5.	Elective course 2	30	30		60	90	150	6
6.	Professional Training			160	160		160	8
7.	Project work					150	150	6
TOTAL		**150**	**150**	**160**	**460**	**600**	**1060**	**44**

Each part of the higher education professional study programme at the first cycle *Business Informatics* comprises 44 ECTS. It consists of three courses of the selected module (18 ECTS), two elective courses (12 ECTS), professional training (8 ECTS) and project work (6 ECTS).

The student accomplishes the part of the higher education professional study programme at the first cycle *Business Informatics* when they perform all the programme regulatory obligations in the range of 44 ECTS, for which they receive a certificate (in accordance with the Article 32a of the Higher Education Act - final bullet point), which is a public document.

5.6.1 Information Systems

The part of the study programme *Information Systems* is aimed at improving, completing, deepening and updating knowledge in the field of information systems development at the first cycle.

Curriculum of the part of the study programme Information Systems

Part of the study programme *Information Systems* comprises 1060 hours or 44 ECTS. It consists of three courses of the selected module *Information Systems* (18 ECTS), two elective courses (12 ECTS), professional training (8 ECTS) and project work (6 ECTS).

Table 14: Curriculum of the part of the study programme *Information Systems*

No.	*Learning unit*	*OSW*			*OSW*	*ISW*	*ASW*	*ECTS*
		L	*T/LW*	*PT*				
1.	Databases II	30	30		60	90	150	6
2.	Business Analysis and Information Systems Modelling	30	30		60	90	150	6
3.	IT Management	30	30		60	90	150	6
4.	Elective course 1	30	30		60	90	150	6
5.	Elective course 2	30	30		60	90	150	6
6.	Project work			160	160		160	8
7.	Final Seminar project					150	150	6
	TOTAL	**150**	**150**	**160**	**460**	**600**	**1060**	**44**

The obligatory instances of students and forms of assessment of knowledge are described in individual learning units' course syllabus.

The student accomplishes the part of the study programme *Information Systems* when they perform all the programme regulatory obligations in the range of 44 ECTS, for which they receive a certificate (in accordance with the Article 32a of the Higher Education Act - final bullet point), which is a public document.

5.6.2 E-Business

The part of the study programme *E-Business* is aimed at improving, completing, deepening and updating knowledge in the field of e-business at the first cycle.

Curriculum of the part of the study programme E-Business

Part of the study programme *E-Business comprises* 1060 hours or 44 ECTS. It consists of three courses of the selected module E-Business (18 ECTS), two elective courses (12 ECTS), professional training (8 ECTS) and project work (6 ECTS).

Table 15: Curriculum of the part of the study programme *E-Business*

No.	*Learning unit*	*OSW*			*OSW*	*ISW*	*ASW*	*ECTS*
		L	*T/LW*	*PT*				
1.	E - Commerce	30	30		60	90	150	6
2.	Analysis and Planning of Web Applications	30	30		60	90	150	6
3.	Information Security Policies	30	30		60	90	150	6
4.	Elective course 1	30	30		60	90	150	6
5.	Elective course 2	30	30		60	90	150	6
6.	Professional Training			160	160		160	8
7.	Project work					150	150	6
	TOTAL	**150**	**150**	**160**	**460**	**600**	**1060**	**44**

The obligatory instances of students and forms of assessment of knowledge are described in individual learning units' course syllabus.
The student accomplishes the part of the study programme *E- Business* when they perform all the programme regulatory obligations in the range of 44 ECTS, for which they receive a certificate (in accordance with the Article 32a of the Higher Education Act - final bullet point), which is a public document.

5.6.3 Human Resources

The part of the study programme *Human Resources* is aimed at improving, completing, deepening and updating knowledge in the field of employment policy, labour law and business ethics at the first cycle.

Curriculum of the part of the study programme Human Resources

Part of the study programme *Human Resources* comprises 1060 hours or 44 ECTS. It consists of three courses of the selected module Human Resources (18 ECTS), two elective courses (12 ECTS), professional training (8 ECTS) and project work (6 ECTS).

Table 16: Curriculum of the part of the study programme Human Resources

No.	*Learning unit*	*OSW*			*OSW*	*ISW*	*ASW*	*ECTS*
		L	*T*	*PT*				
1.	Employment Policy	30	30		60	90	150	6
2.	Labour Law	30	30		60	90	150	6
3.	Business Ethics	30	30		60	90	150	6
4.	Elective course 1	30	30		60	90	150	6
5.	Elective course 2	30	30		60	90	150	6
6.	Professional Training			160	160		160	8
7.	Project work					150	150	6
	TOTAL	**150**	**150**	**160**	**460**	**600**	**1060**	**44**

The obligatory instances of students and forms of assessment of knowledge are described in individual learning units' course syllabus.

The student accomplishes the part of the study programme *Human Resources* when they perform all the programme regulatory obligations in the range of 44 ECTS, for which they receive a certificate (in accordance with the Article 32a of the Higher Education Act - final bullet point), which is a public document.

5.6.4 Artificial Intelligence

The part of the study programme *Artificial Intelligence* is aimed at improving, completing, deepening and updating knowledge in the field of agent-based modelling, knowledge technologies and soft computing.

Curriculum of the part of the study programme Artificial Intelligence

Part of the study programme *Artificial Intelligence* comprises 1060 hours or 44 ECTS. It consists of three courses of the selected module (18 ECTS), two elective courses (12 ECTS), professional training (8 ECTS) and project work (6 ECTS).

Table 17: Curriculum of the part of the study programme *Artificial Intelligence*

No.	*Learning unit*	*OSW*			*OSW*	*ISW*	*ASW*	*ECTS*
		L	*T*	*PT*				
1.	Agent-Based Modelling and Agent Systems	30	30		60	90	150	6
2.	Knowledge Technologies	30	30		60	90	150	6
3.	Soft Computing and Natural Algorithms	30	30		60	90	150	6
4.	Elective course 1	30	30		60	90	150	6
5.	Elective course 2	30	30		60	90	150	6
6.	Professional Training			160	160		160	8
7.	Project work					150	150	6
	TOTAL	**150**	**150**	**160**	**460**	**600**	**1060**	**44**

The obligatory instances of students and forms of assessment of knowledge are described in individual learning units' course syllabus.

The student accomplishes the part of the study programme *Artificial Intelligence* when they perform all the programme regulatory obligations in the range of 44 ECTS, for which they receive a certificate (in accordance with the Article 32a of the Higher Education Act - final bullet point), which is a public document.

6 ACCESS REQUIREMENTS AND CRITERIA FOR THE SELECTION OF CANDIDATES IN THE EVENT OF ENROLMENT RESTRICTIONS

Access requirements

Prerequisites for enrolment in the ***first year*** of higher education professional study programme at the first cycle *Business Informatics* (on the basis of the 38th Article of the Higher Education Act):

- an accomplished matura examination,
- an accomplished vocational matura or final exam after a four-year high school programme,
- an accomplished any four-year high school programme before 1 June 1995.

Criteria for the selection of candidates in the event of enrolment restriction

The faculty may restrict the enrolment if the number of applications for enrolment exceeds the number of open positions. In the event of enrolment restriction, the candidates are selected according to the criterion of achieved points of general academic achievement in the third and fourth year (40% of points) and general academic achievement at the final exam or vocational matura or general matura (60% of points).

Prerequisite for enrolment in the **second year** of study after completing the higher education programme accepted after 1 of January 1994 is a higher education diploma. Candidates must pass the differential exams arising from the difference between the programmes before enrolling in the third year.

Prerequisite for enrolment in the **third year** of study after completing the higher education programme accepted after 1 January 1994 is a higher education diploma. Individual applications will be reviewed by the competent commission and the conditions for enrollment will be determined.

The access requirements are also fulfilled by the candidate who has finished an equivalent education abroad.

7 CRITERIA FOR RECOGNITION OF SKILLS AND COMPETENCES GAINED BEFORE ENROLMENT

Upon the written application of the candidate, enclosed certificates and other documents, the faculty according to Rules on recognition of knowledge and skills recognises the knowledge and training that fully or partly correspond to the general or course-specific competences defined by the higher education professional study programme at the first cycle *Business Informatics.*

Individual documented applications of candidates for the recognition of knowledge acquired before enrolment are addressed by the relevant commission in accordance with the procedures and rules, adopted by the faculty's Senate.

8 VERIFICATION AND ASSESSMENT OF KNOWLEDGE

The verification and assessment of the knowledge of students is designed in the way that enables students and higher education teachers to have constant and quality information on the progress and achievement of the set objectives / competences of the study programme. The study programme requires students to work on a regular basis,

therefore the assessment of knowledge is diagnostic, formative and summative. The verification and assessment process is carried out regularly during and after the completion of individual courses.

The methods of verification and assessment of knowledge are defined in the syllabuses for individual courses and conform to the verification of achieving planned goals, expected student performance and the development of general and course-specific competences. To ensure the diversity of learning and teaching methods as well as validity, reliability and objectivity, higher education teachers use different combinations of verification and assessment in individual courses. Verification and assessment include all taxonomic domains (cognitive, conative and psychomotoric) and all taxonomic levels, whereby we are also interested in the quality of structure and the organisation of knowledge.

The purpose of the assessment is: to assess the student's work, to provide feedback on their progress and the results achieved, to enable their inclusion in further education and employment, and the acquisition of data for the evaluation of pedagogical work.

Students are familiarised with the elements of verification and the criteria for assessment orally at the beginning of the academic year and in writing by the course syllabus.

Examination and assessment methods are: exams, preliminary exams, tests, essays, seminar papers, oral presentations, practical assignments, products, portfolio, diaries, problem solving, projects, peer evaluation, written report on professional training, diploma thesis.

Table 18: Grading scale

Grade		Grade according to ECTS Criteria		Criteria in %	Description of knowledge
10	odlično	A	excellent	95 – 100 %	Outstanding performance with only minor errors
9	prav dobro	B	very good	85 – 94 %	Above-average standard but with some errors
8	prav dobro	C	good	71 – 84 %	Generally sound work with a number of notable errors
7	dobro	D	satisfactory	61 – 70 %	fair knowledge but with significant shortcomings
6	zadostno	E	sufficient	55 – 60 %	knowledge meets the minimum criteria
5 - 1	insufficient	F	fail	< 55 %	knowledge does not meet the minimum criteria
*	successful	P	successful	55 – 100 %	knowledge meets the minimum criteria
*	unsuccessful	F	unsuccessful	< 55 %	knowledge does not meet the minimum criteria

*the grades "successful" and "unsuccessful" are used for grading the knowledge and accomplished obligations in professional training.

For the positive assessment, the students have to achieve at least 55% of the required points. Procedures and rules for examination and assessment of knowledge are governed by the Rules for examination and assessment of knowledge.

9 PROGRESSION REQUIREMENTS FOR THE PROGRAMME

In order to advance to the second year, the student must achieve at least 45 ECTS from the first year, to advance to the third year at least 45 ECTS from the second year and all the obligations from the first year, which amounts to 105 ECTS.

Students may progress to next year even if they have not reached a required ECTS amount, when they have legitimate reasons: motherhood, prolonged illness, urgent family and social circumstances, participation in top professional, cultural and sporting events.

Individual student, who has not accomplished all obligations according to the study programme in order to progress in the next year, may repeat a year once during the study or change the study programme as a result of failure in the previous study programme. The third year cannot be repeated because the pre-graduation (absolvent) period is intended for completing the missing obligations.

A student can be granted an extended student status - according to the Higher Education Act - for a maximum of one year if he/she has excusable reasons.

Depending on the academic achievements of the student, they can finish the course in lesser time than provided in the study programme.

Guidance and counselling

Before enrolling in the study programme, the professional service of the Student Affairs Office at the faculty enables candidates to become fully acquainted with the study programme, modes, conditions of study, etc.

During the study the following activities are organized:

- counselling to promote self-awareness, effectively resolve conflicts and build positive social contacts,
- training for professional writing and effective learning,
- tutoring to help solve problems arising from the organization or realization of study obligations,
- mentorship, in which higher education teachers and associates, with an individual approach, lead students to successful study results,
- counselling for overcoming personal issues,
- counselling in the integration of graduates into employment and various forms of lifelong learning.

10 PROVISIONS ON TRANSFERS BETWEEN STUDY PROGRAMMES

Transfers between study programmes are possible in accordance with the applicable Criteria for transfers between study programmes.

A transition between programmes is when a student terminates his/her education in one study programme and continues his education in another study programme, in which a part or all of the completed study requirements from the first study programme are recognised in the new study programme.

11 MODES OF STUDY

Higher education professional study programme at the first cycle *Business Informatics* is implemented as full-time, part-time and online study. All modes of study are equal.

For full-time and part-time studies, lectures are conducted with the entire group of students, seminar exercises in groups of at least 30 students, and laboratory exercises in groups of at least 15 students. Study is implemented according to the study calendar.

Organised study work in *part-time study* is organised consecutively, one course after another. Each course begins with lectures, followed by tutorials or laboratory work in groups and examination. The same order is organised for all courses. *At least one-third* of the organized study work provided for by the course is completed. As the number of hours of organized study work is lower than that of full-time study, this mode of study requires more independent work.

Remote study (e-study) or a combined form of study: We are not planning this form of study. The nature of the field of study requires direct work with students. The decision of the senate will exceptionally determine the form of distance learning for individual study units or parts of study units of the program.

In some courses, the method of work also requires practical training: laboratory work - exercises in a computer classroom, seminar work, professional training. Practical work is based on real-world problem solving and aims to find such solutions that are most common in practice today, taking into account the latest aids, tools and methodology related to modern information technology.

12 REQUIREMENTS FOR COMPLETION OF THE STUDY

The student completes his / her studies according to the higher education professional study programme at the first cycle *Business Informatics* with the study fields *Business Informatics* or *Computer and Information Science*, when he / she completes all the prescribed study obligations in the amount of 180 ECTS credits.

The student who enrols in the *second year* of the higher education professional study programme at the first cycle *Business Informatics* in accordance with the Criteria for Transfers (after completing their studies at the post-secondary programme, adopted after 1 January 1994), needs to complete all the required differential exams and full-time study requirements of the second and third year in the amount of at least 120 ECTS.

The student who enrols in the *third year* of the higher education professional study programme at the first cycle *Business Informatics* in accordance with the Criteria for Transfers (after completing their studies at the post-secondary programme, adopted before 1 January 1994), needs to complete all the required differential exams and full-time study requirements of the third year in the amount of at least 60 ECTS.

13 REQUIREMENTS FOR COMPLETING THE PART OF THE STUDY PROGRAMME

The prerequisite for completion of the part of the higher education professional study programme at the first cycle *Business Informatics*, are completed all the prescribed study obligations in the amount of 44 ECTS credits. Upon completion, the candidate receives a certificate, which is a public document.

14 PROFESSIONAL TITLE

In accordance with the provisions of Article 4 of the Law on Professional and Scientific Titles, upon completion of studies, a student obtains a professional title:

1. For the study field *Business Informatics*:

- *diplomirana poslovna informatičarka (VS)*, abbreviated *dipl. posl. inf. (VS)* /
- *diplomirani poslovni informatik (VS)*, abbreviated *dipl. posl. inf. (VS*).

2. For the study field Computer and Information Science:
- *diplomirana inženirka računalništva in informatike (VS)*, abbreviated*. inž. rač. in inf. (VS)* /
- *diplomirani inženir računalništva in informatike (VS)*, abbreviated *dipl. inž. rač. in inf. (VS)*.

In accordance with Article 32 of the Higher Education Act and the provisions of the Rules on the Diploma Supplement graduates of the higher education professional study programme at the first cycle *Business Informatics* receive a Diploma Supplement issued by the faculty.

Marjan Blažič, PhD, Acad. Prof., Rector