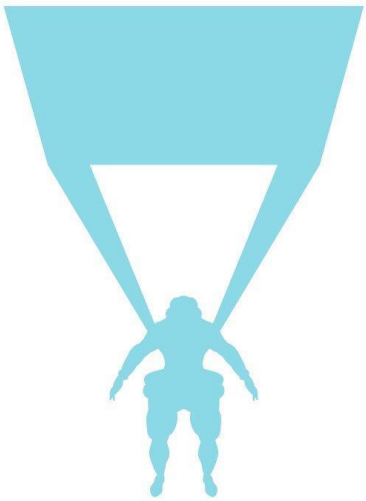
ŠIBENIK UNIVERSITY OF APPLIED SCIENCES
DEPARTMENT OF BUSINESS INFORMATICS
PROFESSIONAL UNDERGRADUATE STUDY OF BUSINESS INFORMATICS

Trg Andrije Hebranga 11
22000 Sibenik



Šibenik, July 2024.

ŠIBENIK UNIVERSITY OF APPLIED SCIENCES
DEPARTMENT OF BUSINESS INFORMATICS
PROFESSIONAL UNDERGRADUATE STUDY OF BUSINESS INFORMATICS

Trg Andrije Hebranga 11
22000 Sibenik

CURRICULUM

Academic year 2024/2025

Dean	PhD. Ljubo Runjić, college prof.
Head of department	PhD. Ivan Livaja, college prof.

Šibenik, July 2024.

1. REQUIREMENTS AND RESULTS OF THE STUDY PROGRAM

Professional undergraduate study of Business Informatics program is intended for the education of students for professional work in management in middle and higher management positions in IT business systems. The study consists of six semesters through which students are offered a high degree of mobility through the choice of program content of studies according to student affinities while maintaining the range of professional knowledge provided by the program core of the study.

Upon completion of the study program the holder of this qualification is entitled to use the legally protected professional title "Professional Bachelor (baccalaureus) of Business Informatics" (bacc. inf.) and perform professional tasks within their professions.

The general competences that the student acquires by completing the studies is the ability to solve problems, analyze, synthesize and evaluate, develop self-learning and literature research, teamwork, planning and organizing, improve numeracy and digital skills, oral and written business communication, the ability to negotiate in the mother tongue and at least two foreign languages, the ability of creative and critical thinking, generating new ideas, the ability to manage time and fulfill tasks and plans within the deadline.

During the studies, students acquire specific knowledge, skills and competences related to management of departments, processes and jobs at the lower and middle level of management in the company and related to activities like management of IT projects, implementation of business information systems, database design, documenting and application integration, modeling, transformation and improvement of business processes, adaptation and implementation of information system, development of computer programs, cooperation and communication using information technology, IT services management, project development management and application of application solutions, while taking into account the human and financial resources of enterprises, the economic, legal and technological environment.

2. EXPECTED LEARNING OUTCOMES

1. To analyze the situation, identify opportunities and anticipate problems faced by organizations and individuals in the application of information technologies
2. Define and evaluate the processes of thinking, planning, decision-making and management in terms of electronically supported business and production
3. Evaluate database design according to business requirements
4. Evaluate different digital channels in marketing campaigns and create and implement a digital marketing plan
5. Interpret mechanisms of data flow control, error control and fragmentation, ways of multiplexing data transmission using routing methods in computer networks
6. Correctly write and interpret basic concepts in the field of economics and economics of enterprises, entrepreneurs and entrepreneurship and correctly interpret their interdependencies
7. Select and apply mathematical methods, models and techniques appropriate for solving problems in the field of Business Information Systems
8. Select and apply basic principles of planning and career development in the profession and their own entrepreneurial ventures
9. Select appropriate professional literature in Croatian and foreign language, prepare and independently present presentations in Croatian and foreign language to expert and general audiences, and critically evaluate the presented professional topics
10. To support and apply ethical and environmental principles as well as legislation and standards that are applicable in information technologies
11. To relate the activities of building and maintaining the information system with the needs of the client and the user
12. Apply key aspects of information technology (programming, algorithms, data structures, databases and project management in the field of IT)
13. Rank security threats and select appropriate countermeasures to protect the information system
14. Communicate successfully with clients, users and colleagues in a verbal and written manner using appropriate terminology including the ability to communicate about the profession in a foreign language
15. Compare and select appropriate development tools at expert level
16. Valorize the important factors that affect the business of the organization and individuals, and apply the basic methods and concepts of planning, management and accounting of business
17. Conclude what are the basic principles and methods of quality project management and work successfully in a team

3. PROGRESSION THROUGH THE STUDY PROGRAM

Before the beginning of academic year, the student is required to enroll according to enrollment deadlines. A person who does not enter the academic year loses status and rights of a student. The deadlines are published on Polytechnic web sites and newsletters and, if necessary, in Polytechnic publications (brochures, promotional materials, etc.).

When enrolling in the study year for the first time, the student enrolls compulsory and elective cources in value of minimum 27 to a maximum of 35 ECTS per semester, i.e. a minimum of 60 ECTS per year, in accordance with the Study Regulations.
When enrolling students according to their academic achievments do satisfy conditions for enrollment in higher study year or a repetition of study year.

I. Students are allowed to enroll in a higher study year if they have obtained at least 50 ECTS by passing courses from the currently enrolled study year and (if applicable) have passed all courses from peceeding study year, in which case they are enrolling to following courses: all currently enrolled non-passed courses and courses from enrolling study year in the value of maximum 60 ECTS.

II. Students who didn't satisfy condition for enrollment in higher study year have the right to enroll in a repetition of the study year with or without partial enrollment of subjects from higher year of study according to following rules:

- Students enrolling in the repetition of the study year must enroll in all not passed courses from currently enrolled year and
- are eligible for partial entry of courses from the second (2.) study year if they have passed courses from the first (1.) study year in value at least 30 ECTS or are eligible for partial entry of courses from the third (3.) year of study if they have at least 30 ECTS in the second (2.) study year
- If a student has completed courses from currently enrolled study year valued in sum of 29 or fewer ECTS credits, he or she does not qualify for partial enrollment of courses

III. Students are not allowed to repeat study year more then once or to enrolle in any course more then twice

Lecturing at undergraduate professional study of Business Informatics consists of lectures, seminars, exercises, laboratory exercises, field work, practical training, projects, consultations, mentoring, colloquia, examinations and other forms of assessment and professional practice.

Prerequisites for enrollment in a higher study year are attended courses from the lower academic year (confirmed by the signature of the course lecturer). The student is obliged to attend all forms of teaching in the scope determined by the performance plan of the teaching of a particular subject.

Figure 1. Number of enrolled students in the academic year 2021./2022.

Year of study	**Full-time student**		**Part-time students**	
	First entry	Repeat	First entry	Repeat
1.	13	3	7	1
2.	15	2	6	2
3.	15	0	2	2

For economics and rationality, classes for full-time and part-time students are carried out jointly whenever possible given spatial and other conditions.

Students are obliged to complete all the commitments undertaken in the course (seminar papers, exercise protocols, project work, case studies) **which the lecturer certifies by signing the index** at the end of the semester (usually the last teaching week of the semester). **The lecturer has the right to refuse signing the index to a full-time student who is absent from more than 30% of contact hours.**

Part-time student's obligations are created according to the possibilities of their attendance in courses, which must be in accordance with the approved performance plan of the lecturing of a particular subject.

Required workload of the full-time students can be 48 hours a week at most, and not less than 40 hours, of which contact hours should not exceed 24 hours a week. Exceptionally, students' workload/contact hours may be greater in the case of intensive professional praxis or project/laboratory work, but not more than two weeks in a row during the semester.

Professional Undergraduate Study of Business Informatics is evaluated with 180 ECTS credits, which are realized through passing of enrolled of the courses, performing professionall praxis and writing bachelor thesis.
Before completing the bachelor thesis, the student **must pass all enrolled courses**. The total number of credits placed including courses, professional praxis and the bachelor thesis should be **at least 180 ECTS points.**

4. LIST OF FACULTY MEMBERS WHO LECTURE ON PROFFESIONAL UNDERGRADUATE STUDY OF BUSINESS INFORMATICS

NAME AND SURNAME OF THE LECTURER	COURSE	CONTACT E-MAIL	CONSULTATION
Ivana BELJO, Master in eng.mat. ing., s. lec.	Financial Mathematics Mathematics	ibeljo@vus.hr	Room 24/II
Goran CRNICA, prof., lec.	English for Information Technology I English for Information Technology II	gcrnica@vus.hr	Room 22/II
Divna GOLEŠ, Master in econ., s.lec.	Principles of microeconomics Quality management	divna@vus.hr	Room 4
Anita GRUBIŠIĆ, Master in econ., s.lec.	Principles of accounting	anita@vus.hr	Room 8
Milan HRGA, Master in eng., lec.	Introduction to Computer Science Programming Fundamentals Introduction to Web Technologies Introduction to Computer Science	mhrga@vus.hr	Room 12
Zvonimir KLARIN, asistent.	Introduction to Databases Introduction to Computer Networks Databases Information Systems Analysis and Design Protection and Security of Information Systems Computer Networks Professional Praxis	zklarin@vus.hr	Room 12
PhD Ivan LIVAJA, college prof.	Introduction to Databases Databases Management of Information Services Protection and Security of Information Systems Professional Praxis	ilivaja@vus.hr	Room 18/II
PhD Dijana MEČEV, college prof.	Principles of Economics	dijana@vus.hr	Room 3
PhD.Ana PERIŠIĆ, Master in eng., s.lec.	Mathematics Business Statistics	sisak@vus.hr	Room 24/II
MSc Tanja RADIĆ LAKOŠ, s.lec.	Information Technologies and Environmental Protection	tanja@vus.hr	Room 11
Jasmina SLADOLJEV, Master in econ., s.lec.	Management	jasmina@vus.hr	Room 5
PhD. Ana VUKIČEVIĆ, college prof.	Entrepreneurship	ana_u@vus.hr	Room 15
PhD Frane UREM, college prof.	Business Information Systems Information Systems Analysis and Design Development of Mobile Applications	frane.urem@vus.hr	Room 6
Jelena ŽAJA, Master in econ., lec.	Financial Management	jzaja@vus.hr	Room 3
PhD Dragan Zlatović, college prof.	Commercial and Copyright Law	zlatovic@vus.hr	Room 20

NAME AND SURNAME OF THE LECTURER	COURSE	CONTACT E-MAIL	CONSULTATION
MSc Danijel Mileta, s. lec.	E-business	danijel.mileta@gmail.com	Room 1
Msc. Darko JUREKOVIĆ, v.pred.	Project Management Cloud Computing	darko.jurekovic@hotmail.com	Room 1
Luca OLIVARI mag.math., asistent	Financial Mathematics Business Statistics	lolivaril@vus.hr	Room 1
PhD. Ivica POLJIČAK, college prof.	Business Communication	poljicak@vus.hr	Room 20

5. PLACE OF TEACHING OF THE UNDERGRADUATE PROFESSIONAL STUDY OF BUSINESS INFORMATICS

Conducting classes at the undergraduate professional study of Business Informatics is performed in the Polytechnic of Šibenik main building, at the address: Šibenik, Trg Andrije Hebranga 11. In the mentioned location, apart from the service offices, there are 16 lecture halls with a total area of 757 m^2.

The premises in which the teaching process takes place provide optimal conditions with regard to the number of enrolled students. The aforementioned space contains spatial capacities that, in keeping with the standards of higher education, enable students to have good quality monitoring and participation in educational activities.

Classes at the Polytechnic take place from Monday to Friday (in exceptional cases on Saturdays in the morning) according to the fix schedule of the lessons published on the notice boards and on the official website of the Polytechnic. In accordance with the requirements of the *Regulation on the content of license and conditions for issuing license to perform activities of higher education, carrying out study programs and re-accreditation of higher education institutions* (Official Gazette No. 24/10) Article 5 (2), the Polytechnic has a ratio of students and the space available for the teaching (1.25 m^2 / student.

6. LIST OF COURSES, LECTURER AND ASSOCIATES, TIMETABLE OF THE SUBJECT, STUDENT WORKLOAD OF THE PROFFESIONAL UNDERGRADUATE STUDY OF BUSINESS INFORMATICS

M / E	SUBJECT HOLDER	COURSE	LECTURER - LECTURES	LECTURER - EXERCISES / SEMINARS	Lectures hours/week	Seminars hours/week	Exercises hours/week	ECTS
		I. SEMESTER						
M	Mečev D.	Principles of Economics	Mečev D.	Mečev D.	**2**		**2**	**5**
M	Beljo I.	Financial Mathematics	Beljo I.	Olivari L.	**2**		**2**	**6**
M	Goleš D.	Principles of Microeconomics	Goleš D.	Goleš D.	**2**	**1**		**5**
M	Hrga M.	Programming Fundamentals	Hrga M.	Hrga M.	**2**		**3**	**5**
M	Hrga M.	Introduction to Computer Science	Hrga M.	Hrga M.	**2**		**2**	**4**
M	Crnica C.	English for Information Technology I	Crnica C.	Crnica C.	**2**		**1**	**3**
M	Poljičak I.	Business Communications	Poljičak I.	Poljičak I.	**2**	**1**		**3**

M / E	SUBJECT HOLDER	COURSE	LECTURER - LECTURES	LECTURER - EXERCISES / SEMINARS	Lectures hours/week	Seminars hours/week	Exercises hours/week	ECTS
		II. SEMESTER						
	Klarin Z.	Computer Application in Office Automation	Klarin Z.	Klarin Z.	**1**		**2**	**4**
M	Hrga M.	Computer Architecture	Hrga M.	Hrga M.	**2**		**2**	**5**
M	Hrga M.	Introduction to Web Technologies	Hrga M.	Hrga M.	**2**		**2**	**5**
M	Radić Lakoš T.	Information Technologies and Environmental Protection	Radić Lakoš T.	Radić Lakoš, T.	**2**	**1**		**3**
M	Beljo I.	Mathematics	Olivari L.	Olivari L.	**2**		**2**	**6**
M	Mileta , D.	E-Business	Mileta , D.	Mileta , D.	**2**	**1**		**3**
M	Crnica C.	English for Information Technology II	Crnica C.	Crnica C.	**2**		**1**	**3**

***M - mandatory course**
E - elective course

M / E	SUBJECT HOLDER	COURSE	LECTURER - LECTURES	LECTURER - EXERCISES / SEMINARS	Lectures hours/week	Seminars hours/week	Exercises hours/week	ECTS
		III. SEMESTER						
M	Grubišić A.	Principles of Accounting	Grubišić A.	Grubišić A	2		2	**5**
M	Udovičić A.	Management with entrepreneurship	Udovičić A.	Udovičić A.	2	1		**4**
M	Pavelic M.	Object Oriented Programming	Pavelic M.	Pavelic M.	2		2	**6**
M	Klarin Z.	Introduction to Operating systems	Klarin Z.	Klarin Z.	2		2	**4**
M	Livaja, I.	Introduction to Databases	Livaja, I.	Klarin Z.	2		2	**4**
M	Zlatović, D.	Commercial and Copyright Law	Zlatović, D.	Zlatović, D.	2	1		**3**
M	Šišara J.	Principles of Marketing	Šišara J.	Šišara J.	2	1		**3**

M / E	SUBJECT HOLDER	COURSE	LECTURER - LECTURES	LECTURER - EXERCISES / SEMINARS	Lectures hours/week	Seminars hours/week	Exercises hours/week	ECTS
		IV. SEMESTER						
M	Perišić, A.	Business Statistics	Perišić, A	Perišić, A.,	2		2	**6**
M	Klarin Z.	Introduction to Computer Networks	Klarin Z.	Klarin Z.	2		2	**4**
M	Urem, F.	Business Information Systems	Urem, F.	Urem, F.	2		2	**4**
M	Klarin Z.	Operating Systems	Matošin J.	Matošin J.	2		2	**6**
M	Pavelic M.	Object Oriented Programming	Pavelic M.	Pavelic M.	2		2	**6**
M	Livaja, I.	Databases	Klarin Z.	Klarin Z.	2		3	**6**
M	Pavelic M.	Development of web applications	Pavelic M.	Pavelic M.	2		2	**4**

***M - mandatory course**
E - elective course

M / N	SUBJECT HOLDER	COURSE	LECTURER - LECTURES	LECTURER - EXERCISES / SEMINARS	Lectures hours/week	Seminars hours/week	Exercises hours/week	ECTS
		V. SEMESTER						
M	Urem, F.	Information systems analysis and design	Urem, F.	Urem, F.	2		4	**6**
M	Livaja, I.	Management of information services	Livaja, I.	Livaja, I.	2		2	**4**
M	Livaja, I.	Protection and security of information Systems	Livaja, I.	Klarin Z.	2		2	**4**
M	Klarin Z.	Computer networks	Klarin Z.	Klarin Z.	2		2	**4**
E	Pavelic M.	Development of mobile applications	Pavelic M.	Pavelic M.	2		2	**4**
E	Šišara J.	Digital marketing and marketing analytics	Lugović S.	Lugović S.	2	1		**4**
E	Klarin Z.	Operation research	Mikulić Ž.	Mikulić Ž.	2		2	**4**
E	Goleš D.	Quality management	Goleš D.	Goleš D.	2	1		**4**
E	Livaja, I.	Internet of Things	Livaja, I.	Livaja, I.	2	1		**4**

M / N	SUBJECT HOLDER	COURSE	LECTURER - LECTURES	LECTURER - EXERCISES / SEMINARS	Lectures hours/week	Seminars hours/week	Exercises hours/week	ECTS
		VI. SEMESTAR						
O	Jureković D.	Project management	Jureković D.	Jureković D.	2		2	**4**
I	Urem, F./Jureković D.	Cloud computing	Urem, F./Jureković D.	Urem, F./Jureković D.	2		2	**4**
O	Livaja, I.	Professional praxis	Livaja, I.	Klarin Z.				**12**
		Bachelor thesis						**10**

***M - mandatory course**
E - elective course

7. CALENDAR FOR THE ACADEMIC YEAR 2019/2020.

The academic calendar for the academic year 2024/25 is available at the link https://www.vus.hr/_download/repository/ODLUKA%20o%20Akademskom%20kalendaru%20za%20akademsku%20godinu%202024.2025..pdf .

8. CALENDAR OF FINAL EXAMINATIONS FOR ACADEMIC YEAR 2021./2022.

The regular winter exam period lasts from January 27, 2024 to February 21, 2025.
The regular summer exam period lasts from June 9, 2024 to July 4, 2025.
The regular autumn exam period lasts from August 25, 2024 to September 19, 2025.

9. SYLLABUSES OF ALL COURSES INCLUDED IN STUDY PROGRAM

I. SEMESTER

1. GENERAL INFORMATION ABOUT THE SUBJECT			
1.1. Title	**Principles of economics**	1.8. ISVU course code	201299
1.2. Lecturer	Dijana Mečev, PhD, s. lec.	1.9. MOZVAG course code	
1.3. Assistants and/or associates		1.10. Forms of teaching (number of hours Lecturing +Practical exercises + Seminars + e learning)	(30+30+0+0)
1.4. Study programme (specialist, undergraduate, graduate)	**Professional Undergraduate Study of Business Informatics**	1.11. Level of e- learning application (1st, 2nd, 3rd level), percentage of on line course performance (max. 20%)	1st – materials available On-line, 0%
1.5. Course status (mandatory, elective)	Mandatory	1.12. Number of course revisions	0
1.6. Study year	1st	1.13. Modernization	□ yes ■ no
1.7. Credit score (ECTS)	5	1.14. Percentage estimate of course changes and/or supplements	Less than 20% ■ More than 20 % □

2. COURSE DESCRIPTION		
2.1. Course objectives	The main objectice of the course is to ensure students have the ability to understand main economic relationships and processes from different areas of real economic issues.	
2.2. Terms of course entry and required competences	Four-year high school education completed; having a qualification at level 4.2	
2.3. Learning outcomes on the study programme level	LO6: To properly write and interpret basic concepts in the field of economics of enterprises, entrepreneurs and entrepreneurship and properly interpret their interdependence. LO16: To valorize elevant factors that affect organization`s and individual`s business and apply basic methods and concepts of planning, management and accounting. LO14: To communicate successfully with clients, users and colleagues using appropriate terminology, including the ability to communicate professionally in a foreign language, both in written and spoken manner.	
2.4. Expected learning outcomes on the course level	**Learning outcomes** towards Bloom's taxonomy: (up to two verbs per LO)	**LO Level:** 1. *Recapture,* 2. *Understanding,* 3. *Application,* 4. *Analysis,* 5. *Evaluation,* 6. *Synthesis*

	1. To demonstrate knowledge and understanding of course content by **defining** and **describing** basic concepts of economics as a science that addresses the problem of scarcity.	1, 1
	2. To **analyze** economic trends using supply and demand analysis.	4
	3. To **analyze** consumer behavior regarding product demand.	4
	4. To **explain** how input markets work.	2
	5. To **calculate** and i**nterpret** different measures of macroeconomic activity, such as gross national product, inflation and unemployment	3, 5
	6. To a**nalyze** the business cycle by analyzing aggregate demand and aggregate supply.	4
	7. To **link** fundamental economic principles and insights, their overall nature and appearance, and similarities and differences.	6

.5. Course content according to detailed curriculum schedule

Constructive alignment

No:	Thematic ensemble / Lecture Topic	Course LO	Content / Teaching Method	Evaluation	Time needed
1.	Introduction into the course and detailed plan.	-	Listen to lectures. By working independently on a computer, they are introduced to the course content and the documents on the e-learning page of the course.	-	2 hours
	Introduction to economics.	1	Listen to the lecture and read the literature, write homework.	In colloquium or written and oral exams they can define and describe the basic economic concepts; explain the circuit diagram and its application and the law of diminishing returns.	8 hours
2.	Supply and demand. How do markets work?	1, 2	Listen to the lecture and read the literature. Individually or in pairs solve case studies, discuss on the exposed topic. Solve exercises.	In colloquium or written and oral exams they can define supply / demand and analyze the impact of individual variables on supply and demand curves	10 hours
3.	Elasticity and its application.	1, 2	Listen to the lecture and read the literature. Solve exercises.	In colloquium or written and oral exams they can define supply / demand elasticity and analyze its application.	8 hours
4.	Demand and Consumer Behavior.	1, 2, 3	Listen to the lecture and read the literature. Individually or in pairs solve case studies. Solve exercises.	In colloquium or written and oral exams they know how to define the utility and paradox of value and explain their application.	8 hours
5.	Production and business organization.	1	Listen to the lecture and read the literature, discuss on the exposed topic.	In colloquium or written and oral exams they know how to define the term and forms of enterprise and describe the economic characteristics of large and small enterprises. They can explain the law of diminishing returns, and calculate and interpret marginal and average products.	6 hours
6.	Cost analysis.	1	Listen to the lecture and read the literature. Solve exercises.	In colloquium or written and oral exams they can define types of costs. They know how to calculate and interpret marginal, average, fixed, variable and total costs. They know how to use cost curves in business analysis.	8 hours
7.	Perfect competition. Market failure.	1, 2, 7	Listen to the lecture and read the literature. They use multimedia and network. Individually or in pairs solve case studies. Solve exercises.	In colloquium or written and oral exams they know how to define perfect competition, analyze the income of companies in the market of perfect competition. They know how to determine the point of enterprise closing down. They can list and explain market failures.	10 hours
8.	Monopoly	1, 2, 3, 7	Listen to the lecture and read the literature. They discuss on the exposed topic. Solve exercises.	In colloquium or written and oral exams they know how to define a monopoly and explain causal factors driving. They know how to calculate and interpret the total, average and	8 hours

					marginal revenue of monopolists. They know how to use the demand curve to analyze monopolist profit maximization. They know how to distinguish between monopoly and perfect competition.	
	9.	Oligopoly and game theory. Monopolistic competition.	1, 2, 3, 7	Listen to the lecture and read the literature. They use multimedia and network. They discuss on the exposed topic. Individually or in pairs solve case studies.	In colloquium or written and oral exams they know how to define an oligopoly and explain causal factors driving. They know how to determine Nash Equilibrium in the oligopoly market. They can define monopolistic competition. They know how to distinguish the behavior of companies in the monopolistic competition in the short term from the behavior in the long term.	8 hours
	10.	Input Markets.	1, 2, 3, 4	Listen to the lecture and read the literature. They discuss on the exposed topic. Solve exercises.	In colloquium or written and oral exams they know how to define and explain factors of production (inputs). They know how to analyze the impact of individual variables on labor market supply and demand curves. They know how to explain the impact of unions and collective bargaining on wages and employment. They can think critically about the reasons for the existence of wage differences and the justification for rent payments. They know how to calculate and interpret the present value of a capital good.	10 hours
	11.	The State and the Economy.	7	Listen to the lecture and read the literature. They use multimedia and network. They discuss on the exposed topic	In colloquium or written and oral exams they can explain the reasons for state intervention, critically consider ways of state intervention in economic developments. They are able to explain public choice theory and the majority paradox.	6 hours
	12.	Income distribution and poverty.	4, 7	Listen to the lecture and read the literature. Student explore the content of this topic area by searching the database.	In colloquium or written and oral exams they can define poverty and its forms, explain Lorenz curve and interpret Gini coefficient. They can explain why income inequalities occur.	6 hours
	13.	Basic concepts of macroeconomics.	1, 5	Listen to the lecture and read the literature. They discuss on the exposed topic. Solve exercises.	In colloquium or written and oral exams they are able to define GDP, inflation and unemployment and explain their components. They know how to calculate and interpret nominal and real GDP, GDP deflator, consumer price index and inflation rate. They are capable of thinking critically about GDP as a measure of welfare and about causes of unemployment.	10 hours
	14.	Aggregate supply and demand. The financial market and a money issue. Central Banking and Monetary Policy.	2, 6, 7	Listen to the lecture and read the literature. They discuss on the exposed topic. Solve exercises.	In colloquium or written and oral exams they can use the aggregate supply and aggregate demand model to analyze fluctuations in the economy. They know how to calculate and interpret the extent of an investment multiplier. They can explain the role of fiscal and monetary policy in the economy.	10 hours
	15.	Concluding Considerations / Repetition and preparation for the exam.		Listen to the lecture and individual preparation for the exam.		32 hours

3. EVALUATION OF STUDENT WORK

3.1. Students` obligations

In accordance with the Book of Rules and the Rulebook on Student Assessment and Evaluation: for all regular students attend at least 70% attendance. Part-time students have the obligation to attend at least 50% of lectures.

Students who have during the course achieved:

- From 0 – 24,9% ECTS credits- is rated F (unsuccessful) and cannot get ECTS credits and must re-enrol the subject in the next academic year;
- From 25 – 49,9% ECTS credits - is rated FX (inadequate) and has to come out and pass the test (exam). A written exam can be held in a regular or extraordinary exam period;
- More than 50% ECTS credits - students have the right to access the final exam of the subject.

Students can pass the final exam in two ways: a) during the course through continuous student attendance (active participation in the lessons, solving case studies and passing three colloquia); b) during the course (active participation in the lessons, solving case studies) and passing the exam (written and oral exam).

3.2. Monitoring student work (enter the share of ECTS credits for each activity so that the total number of ECTS points corresponds to the credit score of the course)

Attendance	0,5	Written exam	3 (by submitting all colloquiums the student is relieved of an written examination)	Project	
Experimental work		Research		Practical work	
Essay		Report		Continuous examination	
Colloquium	4 (by submitting both colloquiums the student is relieved of a written and oral examination)	Seminar paper		Other (inscribe)	
Class activities	0,5	Oral exam	1 (by submitting all colloquiums the student is relieved of an oral examination)	Other (inscribe)	

3.3. Student workload

The student's workload on all bases amounts to 1 ECTS point for 30 hours of work per semester and is estimated as:

Commitment	***Hours (estimate)***
1. Attending classes	60
2. Concluding Considerations / Repetition and preparation for the exam.	90

4. GRADING

4.1. Seminar paper grading

4.2. Colloquium / exam grading

Poor	**Satisfying**	**Above average**
Give answer by memory, no deeper understanding. Does not know and does not apply the basic terms and concepts. Cannot apply or explain the contents of the course.	Reproduces basic terms, without difficulty transfers new knowledge, understands subject matter, explains the terms and the notions that substantiate by examples.	Knowledge is at the level of analysis, synthesis and evaluation. It observes legitimacy, accurately and thoroughly explains the content of the subject, and logically links and explains the terms and concepts that it encapsulates. Find solutions that are not

				originally given. There is a correlation with correlative subjects.	
4.3. Creating a final grade according to evaluation elements	Active participation in the lessons	70-75% of attendance	76-86% of attendance	87-100% of attendance	Created mental map. Solved case study.
		3 points	5 points	7 points	3 points
	Colloquium / written exam	2	3	4	5
		50-64,9%	65-79,9%	80-89,9%	90-100%
		27 points	33 points	39 points	45 points
	Oral exam	2	3	5	5
		27 points	33 points	39 points	45 points

4.4. Creating a final grade according to absolute allocation

Percentage of adopted knowledge, skills and competences (teaching + final exam)	Numerous grade	ECTS grade
90 – 100%	5 (excellent)	A
80 – 89,9%	4 (very good)	B
65 – 79,9%	3 (good)	C
60 – 64,9%	2 (sufficient)	D
50 – 59,9%	2 (sufficient)	E

5. ADDITIONAL INFORMATION ABOUT THE COURSE

	Title	Number of copies in the library	Availability via other media
5.1. Compulsory literature (available in the library and through other media)	1. Samuelson, P. A. i Nordhaus, W. (2007). Ekonomija, 18th edition, Zagreb: Mate d.o.o.	15	
5.2. Additional literature (at the moment of changes and/or amended of study programme)	1. Polovina, S. i Medić Đ. Š. (2002). Osnove ekonomije: priručnik za studij ekonomije. Zagreb: Medinek. 2. Mankiw N.G. (2006). Osnove ekonomije. Zagreb: Mate d.o.o. (chapters 2,3, 4, 5, 6)	5 5	
5.3. Quality assurance methods that ensure the acquisition of knowledge, skills and competences	The control of students' work quality and the acquisition of necessary knowledge and skills will be ensured through interactive work. By keeping track of attendance and student activity during classes and provided information on students` progress through short colloquiums and homework, information for further guidance to students will be provided in order to increase the efficiency of their work. Students will be informed about their rights and obligations as well as the methods of work and the required literature. Indicators of quality assurance system: Student survey, monitoring of annual data from the Croatian employment service on the annual state of student employment, surveys from employers and Alumni association.		
5.4. information on the course and contact with the teacher	It is obligatory for every student to regularly inform about the course, teaching and teaching activities. All information about teaching or any delay in teaching will be published on the e-learning pages of the course and on the web pages of the Polytechnic. Students can contact the teachers during the consultation term (at least one hour per week), while brief questions and explanations can be addressed during classes. It is possible to ask questions by e-mail (from the official e-mail address from the domain @ vus.hr) that will be answered in a short time (no later than five working days from the receipt of e-mail).		

1. GENERAL INFORMATION			
1.1. Course lecturer	Ivana Beljo	1.8. Course code in ISVU	201310
1.2. Course title	**Financial mathematics**	1.9. Course code in MOZVAG	
1.3. Assistants and/or associates		1.10. Forms of teaching (number of hours Lecturing +Practical exercises + Seminars + e learning)	(30+30+0+0)
1.4. Study programme (specialist, undergraduate, graduate)	Undergraduate Professional Study of Business informatics	1.11. Level of e- learning application (1st, 2nd, 3rd level), percentage of on line course performance (max. 20%)	1st, course materials are on-line, 0%
1.5. Course status (mandatory, elective)	Mandatory	1.12. Number of course revisions	2
1.6. Year of study	1st	1.13. Modernization	Yes
1.7. Credit score (ECTS)	6	1.14. Percentage estimate of course changes and/or supplements	Less than 20% X□ More than 20 % □

2. COURSE DESCRIPTION		
2.1. Course objectives	The goal is to provide students with theoretical knowledge: • To adopt knowledge and skills of the analytical way of thinking, and the logical way of concluding in further education. • To introduce students with basic concepts of financial mathematics with appropriate economic applications.	
2.2. Terms of course entry and required competences	4 year secondary education completed; qualification level 4.2 according to the CROQF.	
2.3. Learning outcomes on the study programme level	LO 1: To analyze the situation, identify opportunities and anticipate the problems encountered by organizations and individuals in the application of information technologies. LO 2: To define and evaluate process of thinking, planning, decision making and management in terms of electronically supported business and production. LO 6: To properly write and interpret basic concepts in the field of economics of enterprises, entrepreneurs and entrepreneurship and properly interpret their interdependence. LO 7: To select and apply mathematical methods, models and techniques that are appropriate for solving problems in the area of information and business systems.	
2.4. Expected learning outcomes on the course level	**Learning outcomes** accroding to the Bloom`s taxonomy: (up to two verbs per LO)	**Level of LO:** *1- remembering,* *2- understanding,* *3- application,* *4-analysis,* *5-evaluation,* *6-synthesis*

1.	To solve economic account and apply to the problem from economic practice.	4, 3
2.	To differentiate arithmetic and geometric sequences and perform basic sequence operations.	4, 4
3.	To examine the properties of basic economic functions and comment on them.	4, 4
4.	To solve the problems of a simple and compound interest account.	4
5.	To select appropriate method of transforming the nominal interest rate into a conformal or relative interest rate.	3
6.	To make a loan repayment schedule	4

2.5. Course content according to detailed curriculum schedule

Constructive allignement

no	Thematic unit	LO of the course	Content/teaching methods	Evaluation	Time
16.	Introduction into the course and detailed plan.	-	Listen to lectures. Work independently on computer, get to know course content and elearning documents.	-	2 h
17.	Basic Economic Accounts. Percentage and per mille account. The triple rule. Division account.	1	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	In colloquium or written and oral exams students elect the appropriate economic account and apply to the problem from the economic practice.	6 h
18.	Sequences. Arithmetic and Geometric Sequences	2	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	In colloquium or written and oral exams students know how to differentiate arithmetic and geometric sequences. Solve exercises.	4 h
19.	Economic Functions. Demand and Supply Function.	3	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	In colloquium or written and oral exams students know how to define economic functions, sketch a graph of functions, and examine the demand and supply variability	4 h
20.	Elasticity. Equilibrium.	3	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	In colloquium or written and oral exams students know how to define and calculate the equilibrium of functions, solve the elasticity of supply and demand functions.	4 h
21.	Economic Functions. Revision for colloquium. Colloquium.	1, 2, 3	Write the colloquium.	-	40 h
22.	Simple Interest Account. Anticipative and Decursive Interest Calculation.	4	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	In colloquium or written and oral exams students know how to define and solve the tasks of a simple interest account.	4 h
23.	Compound Interest Account.	4	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	In colloquium or written and oral exams students know how to define and differentiate the type of interest account, solve the tasks of a compound interest account.	4 h
24.	Interest rates. Conformal and Relative interest rate.	4, 5	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	In colloquium or written and oral exams students know how to define and differentiate the interest rate, and choose the appropriate method of transforming the nominal interest rate into a conformal or relative one.	4 h
25.	Prenumerando and postnumerando Present and Final Value. Perpetual annuity.	4, 5	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	In colloquium or written and oral exams students know how to calculate and interpret the elements in the examples with periodic payments.	4 h

	26.	Loan. Repayment model of the loan.	6	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	In colloquium or written and oral exams students know how to calculate the loan according to the repayment models with equal annuities, models with equal repayment quotas and agreed annuities, and make a loan repayment schedule.	4 h	
	27.	Loan. The conversion of the loan.	6	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	In colloquium or written and oral exams students know how to calculate the loan after the loan conversion, and make a loan repayment schedule.	4 h	
	28.	Loan. Combined loan repayment model.	6	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	In colloquium or written and oral exams students know how to calculate combined loan repayment and make a loan repayment schedule.	4 h	
	29.	Loan. Revision for colloquium.	4,5,6	Write the colloquium.	-	40 h	
	30.	Revision		Listen to lectures and read literature.	-	40 h	

3. EVALUATION OF STUDENTS` WORK

3.1. Students` obligations	In accordance with the Regulations on Studying and the Regulations on Student Assessment and Evaluation: for all full-time students attendance of at least 70%. Part-time students are required to attend classes at least 50%. All students are required to carry calculator and formulae list. Students who have during the course achieved: • from 0 - 24,9% ECTS credits- are rated F (unsuccessful) and cannot obtain ECTS credits, and must re-enroll in the next academic year; • from 25 - 49,9% - are assessed by FX (insufficient) and must pass the written exam (test). Written exam (test) can be held in a regular or extraordinary exam period; • more than 50% - students have the right to take the final exam. Students can take the final exam from the course in two ways: a) during the course of teaching through continuous monitoring of students (active participation in classes and through two colloquia); b) by passing the exam (written and oral part of the exam).					
3.2. Monitoring student work (enter the share of ECTS credits for each activity so that the total number of ECTS points corresponds to the credit score of the course)	Attendance	0,5	Written exam	3,5 (without colloquia)	Project	
	Experimental work		Research		Practical work	
	Essay		Report		Continuous examination	0,5
	Colloquium	3,5 (without written exam)	Seminar paper		Other	
	Class activity	0,5	Oral exam	1	Other	
3.3. Student workload	Student workload on all bases for 1 ECTS credit is 30 hours in a semester and is estimated as: 1. Attending classes and exercises 60 hours 2. Preparing colloquia or exams through individual work 120 hours					

4. GRADING SYSTEM

4.1. Grading seminar papers

4.2. Grading colloquia/ written and oral exam

Unsatisfactory	Satisfactory	Above average
Responds by memory, without a deeper understanding. Does not know or apply basic terms and concepts. Does not know how to apply or explain the contents of the course with examples.	Reproduces the basic concepts and without difficulty imparts new knowledge, understands the material, explains the terms and concepts supported with examples.	Knowledge is at the level of analysis, synthesis and evaluation. Observes the principles, accurately and thoroughly explains the content of the material, and logically connects and explains the terms and concepts supported with examples. Finds solutions that were not originally given. Notes correlations with related material.

4.3. Final grade according to evaluation elements

Active course attendance	70-74,9% of attendance	75-79,9% of attendance	80-89,9% of attendance	90-100% of attendance
	2 points	5 points	10 points	20 points
Colloquia/ Written exam	2	3	4	5
	50-64,9%	65-79,9%	80-89,9%	90-100%
	25 points	30 points	35 points	40 points
Oral exam	2	3	5	5
	25 points	30 points	35 points	40 points

4.3. Final grade according to absolute division

Percentage of acquired knowledge, skills and competences (teaching + final exam)	Numerical grade	ECTS grade
90 – 100%	5 (excellent)	A
80 – 89,9%	4 (very good)	B
65 – 79,9%	3 (good)	C
60 – 64,9%	2 (satisfactory)	D
50 – 59,9%	2 (satisfactory)	E

5. ADDITIONAL COURSE INFORMATION			
5.1. Compulsory literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**
	Šorić K., Zbirka zadataka iz matematike s primjenom u ekonomiji, Element, Zagreb, 2011. (selected chapters)	7	
	Šego B., Lukač Z., Financijska matematika, Udžbenici Sveučilišta u Zagrebu, Zagreb, 2011(selected chapters)	5	
5.2. Additional literature (at the moment of changes and/or amended of study programme)	Teaching material and exercises Babić Z., Tomić Plazibat N., Poslovna matematika, Ekonomski fakultet Split, 2003 (selected chapters) Babić Z., Tomić N., Aljinović Z., Matematika za ekonomiste, Ekonomski fakultet Split, 2004 (selected chapters) Harshbarger R.J., Reynolds J.J., Mathematical Applications for the Management, Life and Social Sciences, Houghton Mifflin Company, Boston, 2004. (selected chapters)		
5.3. Quality assurance methods that ensure the acquisition of knowledge, skills and competences	The control of students' work quality and the acquisition of necessary knowledge and skills will be ensured through interactive work. By keeping track of attendance and student activity during classes and provided information on students` progress through short colloquiums and homework, information for further guidance to students will be provided in order to increase the efficiency of their work. Students will be informed about their rights and obligations as well as the methods of work and the required literature. Indicators of quality assurance system: Student survey, monitoring of annual data from the Croatian employment service on the annual state of student employment, surveys from employers and Alumni association.		
5.4. Informing about the course and contacting the teacher	It is the responsibility of each student to be regularly informed about the course, the coursework, and the classroom activities. All notices of classes or possible adjournment will be published in a timely manner on the e-learning site of the course and on the website of the Polytechnic. Students can contact teachers during the consultation period (at least one hour per week), while for short questions and explanations they can be contacted during class. It is also possible to ask questions by e-mail (from the official e-mail address at @ vus.hr), which will be answered as soon as possible (no later than five working days after receiving the e-mail).		

1. GENERAL COURSE INFORMATION			
1.1. Course title	**Computer application in office automation**	1.8. Course code in ISVU	201301
1.2. Course lecturer	Zvonimir Klarin	1.9. Course code in MOZVAG	
1.3. Assistants and/or associates	-	1.10. Forms of teaching (number of hours Lecturing +Practical exercises + Seminars + e learning)	(30+30+0+0)
1.4. Study programme (specialist, undergraduate, graduate)	**Undergraduate Professional Study of Business Informatics**	1.11. Level of e- learning application (1st, 2nd, 3rd level), percentage of on line course performance (max. 20%)	1st, course materials are on-line, 0%
1.5. Course status (mandatory, elective)	Mandatory	1.12. Number of course revisions	2.
1.6. Year of study	2nd	1.14. Modernization	Yes
1.7. Credit score (ECTS)	4	1.14. Percentage estimate of course changes and/or supplements	Less than 20% X□ More than 20 % □

2. COURSE DESCRIPTION	
2.1. Course objectives	Gain basic knowledge of computers, electronic communication, operating and application software. Students will apply the acquired knowledge during and after their studies.
2.2. Terms of course entry and required competences	Completed a four-year high school education; possession of a qualification at level 4.2 according to the CROQF. The condition for access to the exam is passing the course Introduction to Computer Networks.

2.3. . Learning outcomes on the study programme level	LO1: Analyze the situation, identify opportunities and anticipate the problems encountered by organizations and individuals in the application of information technologies LO2: Define and evaluate process of thinking, planning, decision making and management in terms of electronically supported business and production LO13: Rank security threats and select appropriate countermeasures to protect the information system LO14: Communicate successfully with clients, users and colleagues in a verbal and written manner using appropriate terminology including the ability to communicate about the profession in a foreign language	
2.4. Expected learning outcomes on the course level	**Learning outcomes** accroding to the Bloom`s taxonomy: (up to two verbs per LO)	**Level of LO:** *1- remembering,* *2- understanding,* *3- application,* *4-analysis,* *5-evaluation,* *6-synthesis*
	7. Explain the concepts of informatics and computing.	2
	8. Know and evaluate various computer configurations.	2,5
	9. Apply and differentiate the basics of operating systems.	4, 4
	10. Use basic office and business software.	4
	11. Evaluate the use of different data storages.	5
	12. Apply tools for regular maintenance of computer resources.	4

2.5. Course content according to detailed curriculum schedule

Constructive allignement

no	Thematic unit	LO of the course	Content/teaching methods	Evaluation	Time
31.	Introduction to the course and detailed curriculum	1	Listen to lectures. During the exercises, get acquainted with the content of the course and documents on the e-learning platform of the course.	-	4 h
32.	Informatics and computing. Business information systems.	1	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Explain the business information system in general.	4 hi
33.	Hardware support of business information systems.	1,2	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Explain machine configuration.	4 h
34.	Software support of business information systems.	3,4	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Know the purpose of application software.	4 h
35.	Word Processors I	4	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Know the functions of a word processor.	4 h
36.	Word Processors II	4	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Know the functions of a word processor.	4 h
37.	Mail clients	4	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Usage of mail clients.	4 h

	38.	Spreadsheets I	4	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Know and apply a spreadsheet calculator.	4 h
	39.	Spreadsheets II	4	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Know and apply a spreadsheet calculator.	4 h
	40.	Presentations	5	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Know how to make presentations.	4 h
	41.	Browsing the Internet	2	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Use search tools purposefully.	4 h
	42.	Data storage	4, 5	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Know how to store and share data.	4 h
	43.	Computer networks	6	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Know the basics of computer networks.	4 h
	44.	Cybersecurity	4, 5	Listen to lectures, read literature, and prepare individually for the colloquium.	Know how to set up computer protection.	4 h
	45.	Concluding remarks and preparation for the exam	4, 5	Listen to lectures and prepare for the exam individually.	-	60 h

3. EVALUATION OF STUDENTS` WORK

3.1. Students` obligations	In accordance with the Regulations on Studying and the Regulations on Student Assessment and Evaluation: for all full-time students attendance of at least 70%. Part-time students are required to attend classes at least 50%. Students who have during the course achieved: • from 0 - 24,9% ECTS credits- are rated F (unsuccessful) and cannot obtain ECTS credits, and must re-enroll in the next academic year; • from 25 - 49,9% - are assessed by FX (insufficient) and must pass the written exam (test). Written exam (test) can be held in a regular or extraordinary exam period; • more than 50% - students have the right to take the final exam. Students can take the final exam from the course in two ways: a) during the course of teaching through continuous monitoring of students (active participation in classes); b) by passing the exam (written and oral part of the exam).					
3.2. Monitoring student work (enter the share of ECTS credits for each activity so that the total number of ECTS points corresponds to the credit score of the course))	Attendance	0,5	Written exam	2	Project	
	Experimental work		Research		Practical work	
	Essay		Report		Continuous examination	1
	Colloquium		Seminar paper		Other	
	Class activity	0,5	Oral exam	1	Other	
3.3. . Student workload	Student workload on all bases for 1 ECTS credit is 30 hours in a semester and is estimated as: 1. Attending classes and exercises 60 hours 2. Preparing colloquia or exams through individual work 60 hours					

4. FORMIRANJE OCJENE

4.1. Grading seminar papers

-

4.2. Grading colloquia/ written and oral exam

Unsatisfactory	Satisfactory	Above average
Responds by memory, without a deeper understanding. Does not know or apply basic terms and concepts. Does not know how to apply or explain the contents of the course with examples.	Reproduces the basic concepts and without difficulty imparts new knowledge, understands the material, explains the terms and concepts supported with examples.	Knowledge is at the level of analysis, synthesis and evaluation. Observes the principles, accurately and thoroughly explains the content of the material, and logically connects and explains the terms and concepts supported with examples. Finds solutions that were not originally given. Notes correlations with related material.

4.3. Final grade according to evaluation elements

Active course attendance	70-74,9% of attendance	75-79,9% of attendance	80-89,9% of attendance	90-100% of attendance
	2 points	5 points	10 points	20 points
Colloquia/ Written exam	2	3	4	5
	50-64,9%	65-79,9%	80-89,9%	90-100%
	25 points	30 points	35 points	40 points
Oral exam	2	3	5	5
	25 points	30 points	35 points	40 points

4.4. Final grade according to absolute division

Percentage of acquired knowledge, skills and competences (teaching + final exam)	Numerical grade	ECTS grade
90 – 100%	5 (excellent)	A
80 – 89,9%	4 (very good)	B
65 – 79,9%	3 (good)	C
60 – 64,9%	2 (satisfactory)	D
50 – 59,9%	2 (satisfactory)	E

5. ADDITIONAL COURSE INFORMATION

	Title	Number of copies in the library	Availability via other media
5.1. Compulsory literature (available in the library and via other media)	1. Panian, Željko; Strugar, Ivan: Primjena računala u poslovnoj praksi, 2. izdanje, Zagreb: Sinergija, 2004		
5.2. Additional literature (at the moment of changes and/or	3. Acalin Jerko: Informatika – skripta Tekst procesor 4. Acalin Jerko: Informatika – skripta Tablični kalkulator		Avaialble on the e-learning page of the course

amended of study programme)			
5.3. Quality assurance methods that ensure the acquisition of knowledge, skills and competences	The control of students' work quality and the acquisition of necessary knowledge and skills will be ensured through interactive work. By keeping track of attendance and student activity during classes and provided information on students` progress through short colloquiums and homework, information for further guidance to students will be provided in order to increase the efficiency of their work. Students will be informed about their rights and obligations as well as the methods of work and the required literature. Indicators of quality assurance system: Student survey, monitoring of annual data from the Croatian employment service on the annual state of student employment, surveys from employers and Alumni association.		
5.4. Informing about the course and contacting the teacher	It is the responsibility of each student to be regularly informed about the course, the coursework, and the classroom activities. All notices of classes or possible adjournment will be published in a timely manner on the e-learning site of the course and on the website of the Polytechnic. Students can contact teachers during the consultation period (at least one hour per week), while for short questions and explanations they can be contacted during class. It is also possible to ask questions by e-mail (from the official e-mail address at @ vus.hr), which will be answered as soon as possible (no later than five working days after receiving the e-mail).		

1. GENERAL INFORMATION ABOUT THE SUBJECT			
1.1. Title	**Programming fundamentals**	1.8. ISVU course code	201302
1.2. Lecturer	Milan Hrga, M.Eng., lecturer	1.9. MOZVAG course code	
1.3. Assistants and/or associates		1.10. Forms of teaching (number of hours Lecturing +Practical exercises + Seminars + e learning)	(30+45+0+0)
1.4. Study programme (specialist, undergraduate, graduate)	**Professional Undergraduate Study of Business Informatics**	1.11. Level of e- learning application (1st, 2nd, 3rd level), percentage of on line course performance (max. 20%)	1st – materials available On-line, use of on-line tools 10%
1.5. Course status (mandatory, elective)	Mandatory	1.12. Number of course revisions	1
1.6. Study year	1st	1.13. Modernization	□ yes ■ no
1.7. Credit score (ECTS)	5	1.14. Percentage estimate of course changes and/or supplements	Less than 20% ■ More than 20 % □

2. COURSE DESCRIPTION	
2.1. Course objectives	This single semester course in programming requires no prior programming experience. Introduces students to the basics of C++ programming language. Goal of this course is to familiarise students with computer and algorithmic thinking, introduce them to the data abstractions and train for problem solving. Students will be able to develop program solutions for problems of basic to medium complexity using C++ programming language. Students rise capability of abstract thinking, are able to select and apply algorithm for solving of typical known problem and define data abstraction for complex data sets.
2.2. Terms of course entry and required competences	Student has attended Introduction to Computer Science Course
2.3. Learning outcomes on the study programme level	LO 09. To relate the activities of building and maintaining the information system with the needs of the client and the user LO 12. Apply key aspects of information technology (programming, algorithms, data structures, databases and project management in the field of IT) LO 15. Compare and select appropriate development tools at expert level
2.4. Expected learning outcomes on the course level	Student understands and applies basic programming constructs of C/C++ programming language. Is capable to select and define data structure for specific problem, manipulate different basic and user defined data types, as well as complex data structures like arrays, structures and use pointers where applicable. Students are able to read and test C++ code and locate and correct typical programming errors. Students are able to model given simple problem, find solution and transform it to C++ code using above mentioned skills. (basic outcomes for passing grade) Student can analyse problem and is able to apply object oriented approach in data modelling using standard classes (grade C). Student is able to define and apply complex abstract data types using inheritance. (grade B)

	Then solving complex tasks student applies procedures for dynamic memory allocation and deallocation. (grade A)

2.5. Course content according to detailed curriculum schedule

LECTURES			EXERCISES/LABS		
Week	Hour	Theme	Week	Hour	Theme
1	2	Algorithms.	1	3	Scratch. Working in MS Visual Studio
2	2	Programming languages, commands, operators, expressions, dana types.	2	3	Expressions, default data types, implicit transformation
3	2	Variables, algebraic and logical expressions	3	3	Variables, constants (literal and declared). Expressions (operator precedence, evaluation)
4	2	Program sequence control: conditional execution and loops	4	3	Sequence control: conditional execution and loops.
5	2	Programming functions	5	3	Programming functions
6	2	Arguments passing and recursion	6	3	Argument passing (by value/reference), recursion
7	2	Array, strings and user defined data	7	3	Arrays: declaration, use (in expression and as arguments)
8	2	Pointers and references	8	3	Use of pointers and references, advantages and pitfalls
9	2	Introduction to object oriented programming. Encapsulation, "private" and "public" access.	9	3	Repetition
10	2	Class, object, members (attributes and methods).	10	3	Defining and using of classes
11	2	Polymorphism and overloading. Constructor and operator overloading.	11	3	Polymorphism and operator overloading
12	2	Inheritance, friends (functions and operators).	12	3	Inheritance
13	2	Template classes	13	3	Template classes
14	2	Structuring of programming project and team work.	14	3	Project
15	2	Dynamic memory control, exceptions handling etc	15	3	Project

2.6. Teaching methods

■ lectures	■ independent tasks
□ seminars and workshops	□ multimedia and network
■ practical exercises	■ laboratory
□ distance education	□ mentoring
□ mixed e-learning	□ other

2.7. Comments:

Course starts in the second half of winter semester after introduction in Computer Science finishes

2.8. Students` obligations

Minimal attendance for full-time students is 70% of all lectures and exercises. Students who do not satisfy minimal attendance condition will not be allowed to the exam. Part time students can supplement attendance with regular consultations with lecturer on the be-weekly basis.
It is strongly recommended that students take active part during lectures (in discussions, readings, rising questions, problem solving etc.) Part time students who will not be able to attend lectures regularly should contact lecturer in advance during consultation hours or via e-mail (zelimir.mikulic@vus.hr). It is duty of a student to inform itself about lectures on the daily basis. Lecture's weekly schedule is available on the web site of Polytechnic of Šibenik

<table>
<tr><td></td><td colspan="6">(http://www.vus.hr/?stranice=raspored-predavanja-preddiplomski-informaticki-menadzment&id=129). Notifications about possible changes will be sent to students via e-mail and posted on the web page of course e-learning site, together with all information about course, learning materials, assignments etc.</td></tr>
<tr><td rowspan="5">2.9. Monitoring student work (enter the share of ECTS credits for each activity so that the total number of ECTS points corresponds to the credit score of the course)</td><td>Attendance</td><td>2.5</td><td>Written exam</td><td>2</td><td>Project</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Research</td><td></td><td>Practical work</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Report</td><td></td><td>Continuous examination</td><td></td></tr>
<tr><td>Colloquium</td><td></td><td>Seminar paper</td><td></td><td>Other</td><td></td></tr>
<tr><td>Class activity</td><td></td><td>Oral exam</td><td>0.5</td><td>Other</td><td></td></tr>
<tr><td>2.10. Grading and evaluating students` work during classes and on the exam</td><td colspan="6">Student's attendance is regularly registered as is activity in class during lectures and exercises. Three colloquiums are organized during semester (not mandatory for students) and student who scores over 50% points on each of them can go directly to oral exam. Total score from all three colloquiums is then used instead of written exam score. If student passes only two out of three colloquiums, he can repeat one he has missed at the end of semester. Students who do not pass all three colloquiums have to approach to the written exam. On the written exam student has to score minimum of 50% points to be allowed to the oral exam. Final grade is based on the following criteria: 10% based on attendance , 15% on activity during lectures and exercises, 25% based on results of written exam and 50% based on results of oral exam.</td></tr>
<tr><td rowspan="2">2.11. Compulsory literature (available in the library and via other media)</td><td colspan="3">Title</td><td>Number of copies in the library</td><td>Availability via other media</td></tr>
<tr><td colspan="3">Julijan Šribar, Boris Motik: Demistificirani C++, Element, Zagreb 2001. 2. izdanje (ili novije izdanje)
Želimir Mikulić: Osnove programiranja, Veleučilište u Šibeniku, 2018
Dawson M.: Beginning C++ Through Game Programming, 3ed, Course Technology 2011
Downey A.: How to think like a computer scientist, C++ Edition</td><td>10
-
-
-</td><td>-
pdf
pdf
pdf</td></tr>
<tr><td>2.12. Additional literature (at the moment of changes and/or amended of study programme)</td><td colspan="3">Frank Friedman, Elliot Koffman: Problem Solving, Abstraction and Design Using C++, Pierson/Addison Wesley, 5th ed.</td><td>1</td><td></td></tr>
<tr><td>2.13. Quality assurance methods that ensure the acquisition of knowledge, skills and competences</td><td colspan="6">The control of students' work quality and the acquisition of necessary knowledge and skills will be ensured through interactive work. By keeping track of attendance and student activity during classes and provided information on students` progress through short colloquiums and homework, information for further guidance to students will be provided in order to increase the efficiency of their work. Students will be informed about their rights and obligations as well as the methods of work and the required literature.
Indicators of quality assurance system: Student survey, monitoring of annual data from the Croatian employment service on the annual state of student employment, surveys from employers and Alumni association.</td></tr>
</table>

1. GENERAL INFORMATION			
1.1. Course lecturer	Milan Hrga	1.7. Credit score (ECTS)	4
1.2. Course title	**Introduction to computer science**	1.8. Forms of teaching (number of hours Lecturing +Practical exercises + Seminars + e learning)	(30 + 30 + 00 + 0)
1.3. Assistants and/or associates	Milan Hrga	1.9. Level of e- learning application (1st, 2nd, 3rd level), percentage of on line course performance (max. 20%)	Materials available on-line, use of on-line tools (LMC – simulator) 15%
1.4. Study programme (specialist, undergraduate, graduate)	undergraduate professional	a. Number of course revisions	1
1.5. Course status (mandatory, elective)	Mandatory	b. Modernization	New
1.6. Year of study	I.	1.12. Percentage estimate of course changes and/or supplements	Less than 20% ■ More than 20 % □
2. COURSE DESCRIPTION			
2.1. Course objectives	Students are acquainted with: functioning principles of digital computers, role, complexity and representation of algorithms and with the basics of computational/algorithmic thinking. Understanding abstraction and its role in problem definition and solution finding. Establishing capability for problem solving algorithms selection/accommodation. Understanding interactions between algorithm complexity and its efficiency. Rising knowledge about use of computers and its influence on problem solving, based on the way how computers are functioning, their limitations and the way how information is represented in digital computers.		
2.2. Terms of course entry and required competences	none		
2.3. Learning outcomes on the study programme level	LO01. To analyze the situation, identify opportunities and anticipate problems faced by organizations and individuals in the application of information technologies LO 02. Define and evaluate the processes of thinking, planning, decision-making and management in terms of electronically supported business and production LO 04. Interpret mechanisms of data flow control, error control and fragmentation, ways of multiplexing data transmission using routing methods in computer networks LO 05 Select appropriate professional literature in Croatian and foreign language, prepare and independently present presentations in Croatian and foreign language to expert and general audiences, and critically evaluate the presented professional topics LO 09. To relate the activities of building and maintaining the information system with the needs of the client and the user LO 12. Apply key aspects of information technology (programming, algorithms, data structures, databases and project management in the field of IT) LO 15. Compare and select appropriate development tools at expert level .		

2.4. Expected learning outcomes on the course level	Student understands how to transform different types of information (numerical, textual, visual, audio) into data suitable for recording and manipulating in computers. He is able to categorise data and select suitable coding which is best adopted for the given problem. Student understands how computer functions and is able to distinguish different building parts according to von Neumann model. Student understands role of algorithms and how are they defined in different categories of programming languages. Student understands how computers exercise algorithms and is able to evaluate their efficiency. Student applies basic control structures in algorithms as are: conditional execution, program branches program loops etc. Student can evaluate which type of algorithm of iterative or recursive type is effective and efficient in solving of the given problem.

2.5. Course content according to detailed curriculum schedule

LECTURES		EXERCISES	
Introduction to computer science	2	Binary numbers	2
Number representation in computers,	2	Binary arithmetic	2
Bool's logic, logic functions/gates	2	Non number data representation in computers	2
Combinatorial and sequential devices	2	Bool's functions, logical gates	2
Computer architecture principles, von Neumann model	2	Optimization of logical functions, minimization	2
LMC functioning analysis, ISA, Assembler	2	Von Neumann model, LMC	2
Algorithms, definition, examples	2	Programing LMC-a	2
Sorting algorithms	2	Sort algorithm	2
Algorithm complexity, O-notation	2	Algorithm programming, LMC Assembler	2
Formal languages – Programming language	2	Algorithm programming, LMC Assembler	2
Programming	2	Programming in Phyton	2
Computer types and architecture	2	Computer architecture basics	2
Communication networks and protocols	2	Operating system Windows	2
Operation systems	2	Operating system Linux	2
Future development and applications of information technologies	2	Internet, e-mail, Web applications	2

2.6. Teaching methods	■ lectures □ seminars and workshops ■ practical exercises □ distance education □ mixed e-learning □ field teaching	■ independent tasks □ multimedia and network ■ laboratory □ mentoring □ other	2.7. Comments: This course prepares students for Programming Basics and Computer Architecture and Operating Systems courses
2.8. Students` obligations	Minimal attendance for full-time students is 70% of all lectures and exercises. Students who do not satisfy minimal attendance condition will not be allowed to the exam. Part time students can supplement attendance with regular consultations with lecturer on the be-weekly basis. It is strongly recommended that students take active part during lectures (in discussions, readings, rising questions, problem solving etc.) Part time students who will not be able to attend lectures regularly should contact lecturer in advance during consultation hours or via e-mail (zelimir.mikulic@vus.hr). It is duty of a student to inform itself about lectures on the daily basis. Lecture's weekly schedule is available on the web site of Polytechnic of Šibenik (http://www.vus.hr/?stranice=raspored-predavanja-preddiplomski-informaticki-menadzment&id=129). Notifications about possible changes will be sent to students via e-mail and posted on the web page of course e-learning site, together with all information about course, learning materials, assignments etc.		

2.9. Monitoring student work (enter the share of ECTS credits for each	Attendance	2	Written exam	0.5	Project	

activity so that the total number of ECTS points corresponds to the credit score of the course)	Experimental work		Research		Practical work	
	Essay		Report		Continuous examination	
	Colloquium		Seminar paper		Other	
	Class activity		Oral exam	0.5	Other	

2.10. Grading and evaluating students` work during classes and on the exam	Attendance 10% Activity in the Class 15% Writen Exam 25% Oral Exam 50%		
2.11. Compulsory literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**
	Brookshear G. : Computer Science an Overview, 11th ed, Addison Wesley I.Englander: The Architecture of Computer Hardware, Systems Software & Networking, 4th ed., John Wiley & Sons, 2010	1 5	pdf pdf
2.12. Additional litearature (at the moment of changes and/or amended of study programme)	Evans D. : Introduction to Computing, Creative Commons, 2011		pdf
2.13. Quality assurance methods that ensure the acquisition of knowledge, skills and competences	The control of students' work quality and the acquisition of necessary knowledge and skills will be ensured through interactive work. By keeping track of attendance and student activity during classes and provided information on students` progress through short colloquiums and homework, information for further guidance to students will be provided in order to increase the efficiency of their work. Students will be informed about their rights and obligations as well as the methods of work and the required literature. Indicators of quality assurance system: Student survey, monitoring of annual data from the Croatian employment service on the annual state of student employment, surveys from employers and Alumni association.		

1. GENERAL INFORMATION			
1.1. Course title	**English for Information Technology I**	1.8. Course code in ISVU	201304
1.2. Course lecturer	Goran Crnica, prof., pred. (lecturer)	1.9. Course code in MOZVAG	
1.3. Assistants and/or associates	-	1.10. Forms of teaching (number of hours Lecturing +Practical exercises + Seminars + e learning)	(30+15+0+0)
1.4. Study programme (specialist, undergraduate, graduate)	**Undergraduate professional study of Business Informatics**	1.11. Level of e-learning application (1st, 2nd, 3rd level), percentage of online course performance (max. 20%)	1st, course materials are on-line, %
1.5. Course status (mandatory, elective)	Mandatory	1.12. Number of course revisions	2
1.6. Year of study	1st	1.13. Modernization	■ yes □ no
1.7. Credit score (ECTS)	3	1.14. Percentage estimate of course changes and/or supplements	Less than 20% ■ More than 20 % □

2. COURSE DESCRIPTION		
2.1. Course objectives	The aim of the course is to develop language structures, lexis and grammar from the business English language at the intermediate and higher level. Special attention is given to perfecting the techniques of listening, reading, speaking and writing. Professional vocabulary should be mastered at an intermediate and higher level. The objectives also include the repetition and determination of basic tenses, the adoption of professional vocabulary related to the language of information technologies, as well as international and intercultural economic issues.	
2.2. Terms of course entry and required competences	Four-year secondary education completed; possessing a Level 4.2 qualification according to the CROQF. Proficiency in English at minimum B1 level.	
2.3. Learning outcomes on the study programme level	LO 6: Correctly write and interpret basic concepts in the field of economics and economics of enterprises, entrepreneurs and entrepreneurship and correctly interpret their interdependencies	
	LO 9: Select appropriate professional literature in Croatian and foreign language, prepare and independently present presentations in Croatian and foreign language to expert and general audiences, and critically evaluate the presented professional topics	
	LO 14: Communicate successfully with clients, users and colleagues in a verbal and written manner using appropriate terminology including the ability to communicate about the profession in a foreign languagE	
2.4. Expected learning outcomes on the course level (4-10 learning outcomes)	**Learning outcomes according to Bloom's taxonomy:**	**LO level:** 1 - memory, 2 - understanding, 3 - application, 4 - analysis, 5- evaluation,

		6 - synthesis
	13. To **define** and **explain** business English keywords	1,2
	14. To **explain** and **apply** correctly grammatical structures and vocabulary in the field of Business English	2,3
	15. To create independently and present content in the field of Business English	3
	16. To **analyse** medium-sized professional texts and **solve** language tasks	4
	17. To **argue critically** the views expressed and express your own views on the topic of Business English	5
	18. To use part of the Common European Framework of Reference for Languages (CEF) level B1-B1-B2 language competences to generate new ideas	6

2.5. Course content according to detailed curriculum schedule

Constructive alignment

r.br.	Thematic topic of the lecture	Thematic topic of the language exercises	LO of the course	Content / teaching method	Evaluation	Hours needed
46.	Introduction into the course	Students introduce themselves to each other in English	3,5,6	Students listen to the lectures. They work independently on the computer, inform themselves about the course content and eLearning documents. Students get to know each other in small groups, discuss the reasons for choosing their studies and explain what they expect from the studies. Group representatives present to their colleagues the similarities and differences in the reasons for choosing their studies. Students are introduced to the Polytechnic's Code of Ethics.	In the oral part of the final exam, you introduce yourself or your colleagues. They express their opinion about their own linguistic progress and point out the shortcomings and strengths.	3
47.	Companies; A matter of choice	Company structure	1,4,5,6	Students listen to the lecture and take an active part by asking questions and answering questions. In the lectures, students are encouraged to engage in dialogue and discussion, as well as to express opinions and points of view. The use of all language skills (listening, speaking, reading and writing) is recommended.	At the colloquium or in the written part of the final exam, the pupils define and explain the most important terms of the learning units. They solve language exercises that demonstrate an understanding of the meaning of key terms. In the oral part of the final exam, the students critically discuss their views on the unit topics and texts and use part of the general language skills at level B1-B2 of the Common European Framework of Reference for Languages by presenting their ideas and findings.	3
48.	Grammar notes (present tenses)	Language check (present tenses)	2,3,4,6	Students listen to a lecture on grammar and spelling. The students exchange their own experiences on a certain topic and practice language structures by formulating their own examples.	Students apply grammar structures and solve grammar and spelling problems at the colloquium or in the written part of the final exam. In the oral part of the final exam, students use everyday examples to explain how to use certain grammatical structures.	3
49.	Leadership; when to terrorize talent	Reading, vocabulary, collocations	1,4,5,6	Students listen to the lecture and take an active part by asking questions and answering questions. In the lectures,	At the colloquium or in the written part of the final exam, the pupils define and explain the most important terms of the learning units. They solve	3

					students are encouraged to engage in dialogue and discussion, as well as to express opinions and points of view. The use of all language skills (listening, speaking, reading and writing) is recommended.	language exercises that demonstrate an understanding of the meaning of key terms. In the oral part of the final exam, the students critically discuss their views on the unit topics and texts and use part of the general language skills at level B1-B2 of the Common European Framework of Reference for Languages by presenting their ideas and findings.	
	50.	Past tenses	Language check (past tenses)	2,3,4,6	Students listen to a lecture on grammar and spelling. The students exchange their own experiences on a certain topic and practice language structures by formulating their own examples.	Students apply grammar structures and solve grammar and spelling problems at the colloquium or in the written part of the final exam. In the oral part of the final exam, students use everyday examples to explain how to use certain grammatical structures.	3
	51.	Strategy; The big picture	Reading, vocabulary exercises	1,4,5,6	Students listen to the lecture and take an active part by asking questions and answering questions. In the lectures, students are encouraged to engage in dialogue and discussion, as well as to express opinions and points of view. The use of all language skills (listening, speaking, reading and writing) is recommended.	At the colloquium or in the written part of the final exam, the pupils define and explain the most important terms of the learning units. They solve language exercises that demonstrate an understanding of the meaning of key terms. In the oral part of the final exam, the students critically discuss their views on the unit topics and texts and use part of the general language skills at level B1-B1-B2 of the Common European Framework of Reference for Languages by presenting their ideas and findings.	3
	52.	Grammar notes (future forms)	Career skills; Talking about your job	2,3,4,6	Students listen to a lecture on grammar and spelling. The students exchange their own experiences on a certain topic and practice language structures by formulating their own examples.	Students apply grammar structures and solve grammar and spelling problems at the colloquium or in the written part of the final exam. In the oral part of the final exam, students use everyday examples to explain how to use certain grammatical structures.	3
	53.	Articles	Case study	2,3,4,6	Students listen to a lecture on grammar and spelling. The students exchange their own experiences on a certain topic and practice language structures by formulating their own examples.	Students apply grammar structures and solve grammar and spelling problems at the colloquium or in the written part of the final exam. In the oral part of the final exam, students use everyday examples to explain how to use certain grammatical structures.	3
	54.	Pay; the rewards of failure Review 1	Vocabulary; multi- part words	1,2,4,5,6	The students listen to the lecture and prepare individually for the exam. Before the colloquium, students are asked to ask questions about content or grammar.	At the colloquium or in the written part of the final exam, the pupils define and explain the most important terms of the learning units. They solve language exercises that demonstrate an understanding of the meaning of key terms. In the oral part of the final exam, the students critically discuss their views on the unit topics and texts and use part of the general language skills at level B1-B2 of the Common European Framework of Reference for Languages by presenting their ideas and findings.	25

	55.	Grammar notes (present perfect)	Career skills; Getting things done	2,3,4,6	Students listen to a lecture on grammar and spelling. The students exchange their own experiences on a certain topic and practice language structures by formulating their own examples.	Students apply grammar structures and solve grammar and spelling problems at the colloquium or in the written part of the final exam. In the oral part of the final exam, students use everyday examples to explain how to use certain grammatical structures.	3
	56.	Development; Prosperity or preservation	Vocabulary exercises; understanding	1,4,5,6	Students listen to the lecture and take an active part by asking questions and answering questions. In the lectures, students are encouraged to engage in dialogue and discussion, as well as to express opinions and points of view. The use of all language skills (listening, speaking, reading and writing) is recommended.	At the colloquium or in the written part of the final exam, the pupils define and explain the most important terms of the learning units. They solve language exercises that demonstrate an understanding of the meaning of key terms. In the oral part of the final exam, the students critically discuss their views on the unit topics and texts and use part of the general language skills at level B1-B2 of the Common European Framework of Reference for Languages by presenting their ideas and findings.	3
	57.	Language check; Modal verbs of likelihood	Career skills; Giving short presentations	2,3,4,6	Students listen to a lecture on grammar and spelling. The students exchange their own experiences on a certain topic and practice language structures by formulating their own examples.	Students apply grammar structures and solve grammar and spelling problems at the colloquium or in the written part of the final exam. In the oral part of the final exam, students use everyday examples to explain how to use certain grammatical structures.	3
	58.	Marketing; Seducing the masses	Writing	1,4,5,6	Students listen to the lecture and take an active part by asking questions and answering questions. In the lectures, students are encouraged to engage in dialogue and discussion, as well as to express opinions and points of view. The use of all language skills (listening, speaking, reading and writing) is recommended.	At the colloquium or in the written part of the final exam, the pupils define and explain the most important terms of the learning units. They solve language exercises that demonstrate an understanding of the meaning of key terms. In the oral part of the final exam, the students critically discuss their views on the unit topics and texts and use part of the general language skills at level B1-B2 of the Common European Framework of Reference for Languages by presenting their ideas and findings.	3
	59.	Comparatives and superlatives	Skills; Considering alternatives	2,3,4,6	Students listen to a lecture on grammar and spelling. The students exchange their own experiences on a certain topic and practice language structures by formulating their own examples.	Students apply grammar structures and solve grammar and spelling problems at the colloquium or in the written part of the final exam. In the oral part of the final exam, students use everyday examples to explain how to use certain grammatical structures.	3
	60.	Review 2	Final discussion and signatures	1,2,4,5,6	The students listen to the lecture and prepare individually for the exam. Before the colloquium, students are asked to ask questions about content or grammar.	Students apply grammar structures and solve grammar and spelling problems at the colloquium or in the written part of the final exam. In the oral part of the final exam, students use everyday examples to explain how to use certain grammatical structures.	26
3. EVALUATION OF STUDENTWORK							

3.1. Student obligations	Following the Rulebook on Studying and the Rulebook on Student Assessment and Evaluation: for all full-time students, the required attendance is at least 70%. Part-time students are required to attend classes and teach at least 50%; they are also required to write homework. Students are required to bring writing materials (paper and pen/ballpoint pen) to the exercises. The student's acquired knowledge is tested during the course content. Students are evaluated during the teaching process, with particular attention being paid to the student's active participation in teaching and their presentation of homework. Of particular importance for the final grade are the two written tests that the student takes during the semester. If the student passes both exams, he/she is exempted from the written part of the final exam and is obliged to take the oral final exam. Student achievements: • Students with 0 - 24.9% of ECTS credits - are graded with an F (unsuccessful) and cannot earn ECTS credits and must re-enrol the course in the next academic year; • Students with 25 - 49.9% of ECTS credits - are graded FX (insufficient) and must pass the written exam (test). The written exam can be held in a regular or extraordinary exam period; • Students with more than 50% of ECTS credits - students have the right to take the final exam. Students can pass the final exam in two ways: a) by passing two colloquia and an oral exam during the regular or extraordinary exam; b) by passing the final exam consisting of a written and an oral exam during the regular or extraordinary exam.

3.2. Monitoring student work (enter the share of ECTS credits for each activity so that the total number of ECTS points corresponds to the credit score of the course)						
	Attendance	0,5	Written exam	1 (without colloquia)	Project	
	Experimental work		Research		Practical work	
	Essay		Report		Continuous evaluation	
	Colloquium	1 (without written exam)	Seminar paper		(Homework for part-time students)	0,5
	Active participation	0,5	Oral exam	1	(Other)	

3.3. Student workload

The workload of students on all bases is 1 ECTS credit point (30 semester hours) and is estimated as:

Obligation	***Hours (estimated)***
3. Attending classes and language exercises	45
4. Preparing colloquia or exams through individual work	45

4. GRADING SYSTEM

4.1. Grading seminar papers: -

4.2. Grading colloquia/ written and oral exam

Unsatisfactory	**Satisfactory**	**Above average**
Responds by memory, without a deeper understanding. Does not know or apply basic terms and concepts. Does not know how to apply or explain the contents of the course with examples.	Reproduces the basic concepts and without difficulty imparts new knowledge, understands the material, explains the terms and concepts supported with examples.	Knowledge is at the level of analysis, synthesis and evaluation. Observes the principles, accurately and thoroughly explains the content of the material, and logically connects and explains the terms and concepts supported with examples. Finds solutions that were not originally given. Notes correlations with related material.

4.3. Final grade according to evaluation elements

Active participation of lectures and language exercises	70-74,9% of attendance	75-79,9% of attendance	80-89,9% of attendance	90-100% of attendance
	2 points	5 points	10 points	20 points

	Colloquia/Written exam	2	3	4	5
		50-64,9%	65-79,9%	80-89,9%	90-100%
		25 points	30 points	35 points	40 points
	Oral exam	2	3	5	5
		25 points	30 points	35 points	40 points

4.4. Final grade according to absolute division

Percentage of acquired knowledge, skills and competences (teaching + final exam)	Numerical grade	ECTS grade
90 – 100%	5 (excellent)	A
80 – 89,9%	4 (very good)	B
65 – 79,9%	3 (good)	C
60 – 64,9%	2 (satisfactory)	D
50 – 59,9%	2 (satisfactory)	E

5. ADDITIONAL COURSE INFORMATION

	Title	Number of copies in the library	Availability via other media
5.1. Compulsory literature (available in the library and via other media)	1. „Intelligent Business“, Coursebook, Intermediate Business English, Tonya Trappe, Graham Tullis, Pearson Longman		
5.2. Additional literature (at the moment of changes and/or amended of study programme)	2. „Intelligent Business“, Skills Book, Intermediate Business English, Tonya Trappe, Graham Tullis, Pearson Longman 3. „Intelligent Business“, Workbook, Intermediate Business English, Tonya Trappe, Graham Tullis, Pearson Longman		Availability via e-learning platform
5.3. Quality assurance methods that ensure the acquisition of knowledge, skills and competences	The control of student work quality and the acquisition of necessary knowledge and skills will be ensured through interactive work. By keeping track of attendance and student activity during classes and provided information on student progress through short colloquiums and homework, information for further guidance to students will be provided to increase the efficiency of their work. Students will be informed about their rights and obligations as well as the methods of work and the required literature. Indicators of quality assurance system: Student survey, monitoring of annual data from the Croatian employment service on the annual state of student employment, surveys from employers and Alumni association.		
5.4. Informing about the course and contacting the teacher	It is the responsibility of each student to be regularly informed about the course, the coursework, and classroom activities. All notices of classes or possible adjournment will be published on time on the e-learning site of the course and the website of the Polytechnic. Students can contact teachers during the consultation period (at least one hour per week), while for short questions and explanations they can be contacted during class. It is also possible to ask questions by e-mail (from the official e-mail address at @vus.hr), which will be answered as soon as possible (no later than five working days after receiving the e-mail).		

· GENERAL INFORMATION			
1.1. Course lecturer	Ivica Poljičak, PhD	1.8. Course code in ISVU	140748
1.2. Course title	**Business Communication**	1.9. Course code in MOZVAG	
1.3. Assistants and/or associates		1.10. Forms of teaching (number of hours Lecturing +Practical exercises + Seminars + e learning)	(30+0+15+0)
1.4. Study programme (specialist, undergraduate, graduate)	**Professional Undergraduate Study of Business Informatics**	1.11. Level of e- learning application (1st, 2nd, 3rd level), percentage of on line course performance (max. 20%)	1st, course materials are on-line, 0%
1.5. Course status (mandatory, elective)	Elective	1.12. Number of course revisions	4
1.6. Year of study	1st	1.15. Modernization	Yes
1.7. Credit score (ECTS)	3	1.14. Percentage estimate of course changes and/or supplements	Less than 20% X□ More than 20 % □
2. COURSE DESCRIPTION			
2.1. Course objectives	Getting familiar with basic communication terms, forms and processes. Recognition and understanding of communication models and styles, with a purpose of effective application in business communication..		
2.2. Terms of course entry and required competences	4 year secondary education completed		
2.3. Learning outcomes on the study programme level	LO 9: Select appropriate professional literature in Croatian and foreign language, prepare and independently present presentations in Croatian and foreign language to expert and general audiences, and critically evaluate the presented professional topics LO 14: Communicate successfully with clients, users and colleagues in a verbal and written manner using appropriate terminology including the ability to communicate about the profession in a foreign language. LO 17: Conclude what are the basic principles and methods of quality project management and work successfully in a team		

2.4. Expected learning outcomes on the course level	**Learning outcomes** accroding to the Bloom`s taxonomy: (up to two verbs per LO)	**Level of LO:** *1- remembering, 2- understanding, 3- application, 4-analysis, 5-evaluation, 6-synthesis*
	1. define forms and processes of communication	2,3,4,5.6
	2. identify and explain interpersonal communication	2,3,4,5.6
	3. categorize and analyse verbal and nonverbal communication	2,3,4,5.6
	4. define and analyse communication styles	2,3,4,5.6
	5. analyse and apply different forms of electronic communication	2,3,4,5.6
	6. define public speaking	2,3,4,5.6
	7. analyse and apply basic presentation skills	2,3,4,5.6

2.5. Course content according to detailed curriculum schedule

Constructive allignement

no	Thematic unit	LO of the course	Content/teaching methods	Evaluation	Time
1	Introduction into the course and detailed plan.	1	Listen to lectures. Work independently on computer, get to know course content and elearning documents.	-	5 h
2.	Forms and processes of communication	1,2	Listen to lectures and read literature. Independently and in a team, analyze individual examples of different forms and processes of communication.	At the colloquium or written / oral exam, they know how to identify and evaluate the model of the communication process and the participants in the communication process.	10 h
3.	Interpersonal communication	2,3,4	Listen to lectures and read literature. In the seminar classes, individually research examples of interpersonal communication, explain and present them.	At the colloquium or written / oral exam, they know how to identify and evaluate interpersonal communication and principles of successful communication.	10 h
4.	Business communication – structure of communication	2,3,4	Listen to lectures and read literature. In the seminar classes, individually research the content of this thematic field and present it individually.	At the colloquium or written / oral exam, they know how to identify verbal, nonverbal, written and electronic communication.	10 h

	5.	Effective communication	2,3,4	Listen to lectures and read literature. In the seminar classes, individually research the content of effective communication and present it individually.	At the colloquium or written / oral exam, they can analyze and explain the key elements of effective communication: concise presentation, active listening, asking questions, a positive atmosphere and avoiding meta-languages.	10 h	
	6.	Nonverbal communication – body language	1,2,3,4	Listen to lectures and read literature. In the seminar classes, individually research nonverbal communication.	At the colloquium or written / oral exam, they can distinguish and explain different aspects of the impact of nonverbal communication on interpersonal communication.	10 h	
	7.	Communication styles – assertive communication style	3,4,6	Listen to lectures and read literature. In the seminar classes, individually research communication styles, especially assertive communication style.	They know how to define and interpret an assertive communication style in a colloquium or written / oral exam.	10 h	
	8.	Communication styles – aggressive and submissive	3,4,6	Listen to lectures and read literature. In the seminar classes, individually research communication styles, especially aggressive and submissive communication style.	They know how to define and interpret aggressive and submissive communication style at a colloquium or written / oral exam.	10 h	
	9.	Communication and cultural differences	2,3,4,6	Listen to lectures and read literature. In the seminar classes, individually research the influence of cultural differences on communication process.	At the colloquium or written / oral exam, they can identify certain types of cultural differences and explain how they affect communication.	10 h	
	10.	Business correspondence	2,3,4.6	Listen to lectures and read literature. In the seminar classes, individually research business correspondence.	At the colloquium or written / oral exam, they can explain, analyse and apply various forms of business correspondence.	10 h	
	11.	Electronic communication	5.6	Listen to lectures and read literature. In the seminar	At the colloquium or written / oral exam, they can describe electronic	10 h	

				classes, individually research electronic correspondence.	communication and analyse various forms of electronic communication.		
	12.	Public relations	4,6,7	Listen to lectures and read literature. In the seminar classes, individually research the infuence of public relations in modern organizations.	At the colloquium or written / oral exam, they know how to define public relations and describe the components of the public relations function.	10 h	
	13.	Public speaking and meeting management	6,7	Listen to lectures and read literature. In the seminar classes, individually research the content of public speaking and meeting management.	At the colloquium or written / oral exam, they can explain and analyse public speaking and describe the key elements of meeting management.	10 h	
	14.	Preparation of presentations and presenting	4,6,7	Listen to lectures and read literature. In the seminar classes, individually research how to prepare and make presentations.	At the colloquium or written / oral exam, they know how to identify the main parts of the presentation preparation and make a quality ppt.	10 h	
	15.	Negotiating as a communication skill	2,3,4,5.6	Listen to lectures and read literature. In the seminar classes, individually research negotiating as a communication skill.	At the colloquium or written / oral exam, they can define negotiation and describe the basic types of negotiation.	10 h	

3. EVALUATION OF STUDENTS` WORK	
3.1. Students` obligations	In accordance with the Regulations on Studying and the Regulations on Student Assessment and Evaluation: for all full-time students attendance of at least 70%. Part-time students are required to attend classes at least 50%. All students are required to prepare, present and positively pass the seminar paper. Students who have during the course achieved: • from 0 - 24,9% ECTS credits- are rated F (unsuccessful) and cannot obtain ECTS credits, and must re-enroll in the next academic year; • from 25 - 49,9% - are assessed by FX (insufficient) and must pass the written exam (test). Written exam (test) can be held in a regular or extraordinary exam period; • more than 50% - students have the right to take the final exam. Students can pass the final exam from the course in two ways: a) during classes through continuous monitoring of students (active participation in classes and preparation and presentation of seminar paper and two colloquia); b) during classes (active participation in classes and preparation and presentation of seminar work) and taking exams (written and oral exam). Students can take the final exam from the course in two ways: a) during the course of teaching through continuous monitoring of students (active participation in classes and through two colloquia); b) by passing the exam (written and oral part of the exam).

3.2. Monitoring student work (enter the share of ECTS credits for each activity so that the total number of ECTS points corresponds to the credit score of the course)	Attendance	0,5	Written exam	2 (without colloquia)	Project	
	Experimental work		Research		Practical work	
	Essay		Report		Continuous examination	
	Colloquium	4,5 (without written and oral exam)	Seminar paper		Other	
	Class activity	0,5	Oral exam	2,5	Other	
3.3. Student workload	Student workload on all bases for 1 ECTS credit is 30 hours in a semester and is estimated as: 1. Attending classes and exercises 60 hours 2. Preparing colloquia or exams through individual work 90 hours					

4. GRADING SYSTEM

4.1. Grading seminar papers

4.2. Grading colloquia/ written and oral exam

Unsatisfactory	**Satisfactory**	**Above average**
Responds by memory, without a deeper understanding. Does not know or apply basic terms and concepts. Does not know how to apply or explain the contents of the course with examples.	Reproduces the basic concepts and without difficulty imparts new knowledge, understands the material, explains the terms and concepts supported with examples.	Knowledge is at the level of analysis, synthesis and evaluation. Observes the principles, accurately and thoroughly explains the content of the material, and logically connects and explains the terms and concepts supported with examples. Finds solutions that were not originally given. Notes correlations with related material.

4.3. Final grade according to evaluation elements

Active course attendance	70-74,9% of attendance	75-79,9% of attendance	80-89,9% of attendance	90-100% of attendance
	2 points	5 points	10 points	20 points
Colloquia/ Written exam	2	3	4	5
	50-64,9%	65-79,9%	80-89,9%	90-100%
	25 points	30 points	35 points	40 points
Oral exam	2	3	5	5
	25 points	30 points	35 points	40 points

4.3. Final grade according to absolute division		Percentage of acquired knowledge, skills and competences (teaching + final exam)	Numerical grade	ECTS grade	
		90 – 100%	5 (excellent)	A	
		80 – 89,9%	4 (very good)	B	
		65 – 79,9%	3 (good)	C	
		60 – 64,9%	2 (satisfactory)	D	
		50 – 59,9%	2 (satisfactory)	E	

5. ADDITIONAL COURSE INFORMATION

	Title	**Number of copies in the library**	**Availability via other media**
5.1. Compulsory literature (available in the library and via other media)	Lamza-Maronić, M. i Glavaš, J. (2008.), Poslovno komuniciranje, Osijek, Studio HS Internet i EFOS.	5	
5.2. Additional literature (at the moment of changes and/or amended of study programme)	Fox, R. (2006.), Poslovna komunikacija, Zagreb, Hrvatska sveučilišna naklada i Pučko otvoreno učilište – Zagreb.	5	
	Reardon, K., K. (1988.), Interpersonalna komunikacija, Zagreb, Alineja.	5	
5.3. Quality assurance methods that ensure the acquisition of knowledge, skills and competences	The control of students' work quality and the acquisition of necessary knowledge and skills will be ensured through interactive work. By keeping track of attendance and student activity during classes and provided information on students` progress through short colloquiums and homework, information for further guidance to students will be provided in order to increase the efficiency of their work. Students will be informed about their rights and obligations as well as the methods of work and the required literature. Indicators of quality assurance system: Student survey, monitoring of annual data from the Croatian employment service on the annual state of student employment, surveys from employers and Alumni association.		
5.4. Informing about the course and contacting the teacher	It is the responsibility of each student to be regularly informed about the course, the coursework, and the classroom activities. All notices of classes or possible adjournment will be published in a timely manner on the e-learning site of the course and on the website of the Polytechnic. Students can contact teachers during the consultation period (at least one hour per week), while for short questions and explanations they can be contacted during class. It is also possible to ask questions by e-mail (from the official e-mail address at @ vus.hr), which will be answered as soon as possible (no later than five working days after receiving the e-mail).		

II. SEMESTAR

1. GENERAL INFORMATION ABOUT THE SUBJECT			
1.1. Title	**PRINCIPLES OF MICROECONOMICS**	1.8. ISVU course code	201305
1.2. Lecturer	Divna Goleš, Master of Economics, Senior lecturer	1.9. MOZVAG course code	
1.3. Assistants and/or associates	None	1.10. Forms of teaching (number of hours Lecturing +Practical exercises + Seminars + e learning)	(30+00+15+0)
1.4. Study programme (specialist, undergraduate, graduate)	**Professional Undergraduate Study of Business Informatics**	1.11. Level of e- learning application (1st, 2nd, 3rd level), percentage of on line course performance (max. 20%)	1st – materials available On-line, 0%
1.5. Course status (mandatory, elective)	Mandatory	1.12. Number of course revisions	2.
1.6. Study year	1st	1.13. Modernization	▪ yes □ no
1.7. Credit score (ECTS)	5	1.14. Percentage estimate of course changes and/or supplements	Less than 20% ▪ More than 20 % □

2. COURSE DESCRIPTION	
2.1. Course objectives	The aim of the course is to familiarize students with the market conditions in which businesses operate, the assumptions that need to be fulfilled for the purpose of realizing the business for which they have been founded and the understanding of basic concepts related to the business, entrepreneur, entrepreneurship and their interdependence. Furthermore, the aim of the course is to enable students to acquire theoretical and practical knowledge of business assets, types of costs and their movements depending on the degree of utilization of the capacity and the calculation of prices and indicators of business performance on the market.

2.2. Terms of course entry and required competences	Four-year secondary education completed; Possession of qualification at level 4.2. according to the CROQF.	
	LO6: Correctly write and interpret basic concepts in the field of economics and economics of enterprises, entrepreneurs and entrepreneurship and correctly interpret their interdependencies. LO9: Select appropriate professional literature in Croatian and foreign language, prepare and independently present presentations in Croatian and foreign language to expert and general audiences, and critically evaluate the presented professional topics. LO16: Valorize the important factors that affect the business of the organization and individuals, and apply the basic methods and concepts of planning, management and accounting of business	
2.4. Expected learning outcomes on the course level	**Learning outcomes** towards Bloom's taxonomy: (up to two verbs per LO)	**LO Level:** *1. Recapture,* *2. Understanding,* *3. Application,* *4. Analysis,* *5. Evaluation,* 6. *Synthesis*
	1.To analyse the basics of business economic. entrepreneur and entrepreneurship and explain their interdependence and prerequisite for founding and successful business operations.	4,2
	2.To distinguish the core concepts of business assets, types, duration and the way of transferring value to new products and services, choose the method and calculate depreciation, working capital and capacity utilization.	4,5
	3.Analyze cost types, locations and cost drivers, and dependency on the degree and changes in capacity utilization and propose calculation methods for calculating the price of products and services.	4,5
	4.Interpret the performance and benchmarks of business performance in the company and analyze the business policies and economics of business functions in the company.	3,5
	5.To present a seminar paper in which a company's business was elaborated	6,5

2.5. Course content according to detailed curriculum schedule

Constructive alignment

No:	Thematic ensemble / Lecture Topic	Course LO	Content / Teaching Method	Evaluation	Time needed
1.	Introduction to the course and a detailed performance plan.	-	Listen to the lecture. On seminary teaching, by independent work on the computer students get acquainted with course content and documents on the e-learning course page.	-	3 hours
2.	Introduction to business economics, concept and division of economics.	1	They listen to a lecture. They read the literature.	At the colloquium or the written and oral exam, they define the basic knowledge about the economics of enterprises and the division of economics.	5 hours
3.	Concept and type of business, management and business principles of a company.	1	They listen to a lecture. They read the literature.	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit.	6 hours

	4.	Business policy, business planning and financing.	1,5	They listen to a lecture, they read the literature, present a seminar paper, followed by a discussion.	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit.	6 hours
	5.	Reproductions of business, long-term assets, maintenance and investment in core assets.	1,2	They listen to a lecture, they read the literature, present a seminar paper, followed by a discussion.	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they should present and analyze the same on a concrete example.	10 hours
	6.	Amortization of core assets: concept, basic functions and depreciation calculation systems, examples.	1,2,5	They listen to a lecture, they read the literature, solve examples ,present a seminar paper, followed by a discussion.	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they should present and analyze the same on a concrete example.	10 hours
	7.	Capacity to work: concept, type and calculation of degree of utilization capacities, examples.	1,2,5	They listen to a lecture, they read the literature, solve examples ,present a seminar paper, followed by a discussion.	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they should present and analyze the same on a concrete example..	10 hours
	8.	Short-term assets: concept, distribution and appearance forms, calculation of the need for turnover, ration coefficient and number of bonding days, liquidity and solvency, examples I. colloquium..	1,2,5	They listen to a lecture, they read the literature, solve examples ,present a seminar paper, followed by a discussion.	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they should present and analyze the same on a concrete example.	15 hours
	9.	Cost theory: concept and types of costs, places and cost bearers. Planning and cost analysis.	2,3,5	They listen to a lecture, they read the literature, present a seminar paper, followed by a discussion.	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit	10 hours
	10.	Cost dependency on capacity change rate changes, examples.	2,3,5	They listen to a lecture, they read the literature, solve examples ,present a seminar paper, followed by a discussion.	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they should present and analyze the same on a concrete example.	10 hours
	11.	Point covers costs, relationship between cost and revenue, examples.	2,3,5	They listen to a lecture, they read the literature, solve examples ,present a seminar paper, followed by a discussion	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they should present and analyze the same on a concrete example-	10 hours
	12.	Formation and price policy, concept, types and methods of calculation, examples.	2,3,5	They listen to a lecture, they read the literature, solve examples ,present a seminar paper, followed by a discussion	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they should present and analyze the same on a concrete example.	10 hours
	13.	Successfulness and benchmarks of business performance: productivity, economy and profitability of business, accumulation and reproduction ability of businesses.	3,4,5	They listen to a lecture, they read the literature, ,present a seminar paper, followed by a discussion	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit,.	10 hours
	14.	Business results, monitoring business operations. Economics of business functions.	1,2,3,4,5	They listen to a lecture, they read the literature, present a seminar paper, followed by a discussion	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit,.	10 hours

	15.	Final lecture, course signatures, II. colloquium	2,3,4,5	They listen to a lecture and prepare independently for the exam.		25 hours

3. EVALUATION OF STUDENT WORK

3.1. Students` obligations

In accordance with the Book of Rules and the Rulebook on Student Assessment and Evaluation: for all regular students attend at least 70% attendance. Part-time students have the obligation to attend at least 50% of lectures. All students must create, present and positively colloquy seminar paper.

Students who have during the course achieved:

- From 0 – 24,9% ECTS credits- is rated F (unsuccessful) and cannot get ECTS credits and must re-enrol the subject in the next academic year;
- From 25 – 49,9% ECTS credits - is rated FX (inadequate) and has to come out and pass the test (exam). A written exam can be held in a regular or extraordinary exam period;
- More than 50% ECTS credits - students have the right to access the final exam of the subject.

Students can pass the final exam in two ways: a) during the course through continuous student attendance (active participation in the lessons, making and presenting the seminar paper, passing two colloquia); b) during the course (active participation in the lessons, creating and presenting the seminar) and passing the exam (written and oral exam).

3.2. Monitoring student work (enter the share of ECTS credits for each activity so that the total number of ECTS points corresponds to the credit score of the course)

Attendance	0,5	Written exam	2 (by submitting both colloquiums the student is relieved of an written examination)	Project	
Experimental work		Research		Practical work	
Essay		Report		Continuous examination	
Colloquium	3 (by submitting both colloquiums the student is relieved of a written and oral examination)	Seminar paper	1	Other (inscribe)	
Class activities	0,5	Oral exam	1,5 (by submitting both colloquiums the student is relieved of an oral examination)	Other (inscribe)	

3.3. Student workload

The student's workload on all bases amounts to 1 ECTS point for 30 hours of work per semester and is estimated as:

	Commitment	***Hours (estimate)***
1.	Attending classes	45
2.	Creating and Presenting seminar paper	15
3.	Preparation for the Colloquium / exam through self-study	90

4. GRADING

4.1. Seminar paper grading

Valuation Element	Poor	Satisfying	Above average
Organization	The paper is not organized in a logical order and its structure is lacking.	The paper is well structured with a clear distinction between the introduction, the main part of the text and the conclusion.	The paper is well-structured with a clear distinction between the introduction, the main part of the text and the conclusions that are perfectly logically linked to one another
Terminology, writing style	Words and phrases are low harmonized with official terminology. Writing style is not appropriate, sentences are too long, modest vocabulary, and frequent and repeated grammatical mistakes.	Words and phrases are aligned with official terminology. The writing style is appropriate, the sentence structure is clear, the vocabulary is appropriate and has little grammatical errors.	Words and phrases are aligned with official terminology and show an understanding of their meaning. The writing style is excellent, the sentences are clear and concise, the vocabulary is rich and there are no grammatical errors.
Quoting and referencing	Sources are not specified at all. The references do not match the topic and show a superficial approach to the research topic.	Sources are listed, but incomplete and with errors. The references are appropriate for the subject and show a satisfactory research attitude.	Sources are accurate, complete and consistent. The references are appropriate, their list is "rich" and comprehensive and shows a robust research approach.

4.2. Colloquium / exam grading

Poor	Satisfying	Above average
Give answer by memory, no deeper understanding. Does not know and does not apply the basic terms and concepts. Cannot apply or explain the contents of the course.	Reproduces basic terms, without difficulty transfers new knowledge, understands subject matter, explains the terms and the notions that substantiate by examples.	Knowledge is at the level of analysis, synthesis and evaluation. It observes legitimacy, accurately and thoroughly explains the content of the subject, and logically links and explains the terms and concepts that it encapsulates. Find solutions that are not originally given. There is a correlation with correlative subjects.

4.3. Creating a final grade according to evaluation elements

Active participation in the lessons	70-75% of attendance	76-86% of attendance	87-100% of attendance	Solved case study and project
	2 points	4 points	7 points	3 points
Seminar paper	2	3	4	5
	5 points	7 points	8 points	10 points
Colloquium / written exam	2	3	4	5
	50-64,9%	65-79,9%	80-89,9%	90-100%
	25 points	30 points	35 points	40 points
Oral exam	2	3	5	5
	25 points	30 points	35 points	40 points

4.4. Creating a final grade according to absolute allocation

	Percentage of adopted knowledge, skills and	Numerous grade	ECTS grade

		competences (teaching + final exam)		
		90 – 100%	5 (excellent)	A
		80 – 89,9%	4 (very good)	B
		65 – 79,9%	3 (good)	C
		60 – 64,9%	2 (sufficient)	D
		50 – 59,9%	2 (sufficient)	E

5. ADDITIONAL INFORMATION ABOUT THE COURSE

	Title	Number of copies in the library	Availability via other media
5.1. Compulsory literature (available in the library and through other media)	1.Goleš D. (2016).*Upravljanje kvalitetom*, script, Veleučilište u Šibeniku, Šibenik		e- learaning
	2.Karić M.(2009).*Ekonomika poduzeća*, Ekonomski fakultet Osijek, Grafika d.o.o., Osijek		
5.2. Additional literature (at the moment of changes and/or amended of study programme)	1. Grubišić D.(2007).* Poslovna ekonomija*, (second supplement edition), Ekonomski fakultet Split, Split 2. Škrtić M.(2006). *Poduzetništvo* Sinergija-nakladništvo d.o.o., Zagreb	2 2	
5.3. Quality assurance methods that ensure the acquisition of knowledge, skills and competences	The control of students' work quality and the acquisition of necessary knowledge and skills will be ensured through interactive work. By keeping track of attendance and student activity during classes and provided information on students` progress through short colloquiums and homework, information for further guidance to students will be provided in order to increase the efficiency of their work. Students will be informed about their rights and obligations as well as the methods of work and the required literature. Indicators of quality assurance system: Student survey, monitoring of annual data from the Croatian employment service on the annual state of student employment, surveys from employers and Alumni association.		
5.4. information on the course and contact with the teacher	It is obligatory for every student to regularly inform about the course, teaching and teaching activities. All information about teaching or any delay in teaching will be published on the e-learning pages of the course and on the web pages of the Polytechnic. Students can contact the teachers during the consultation term (at least one hour per week), while brief questions and explanations can be addressed during classes. It is possible to ask questions by e-mail (from the official e-mail address from the domain @ vus.hr) that will be answered in a short time (no later than five working days from the receipt of e-mail).		

1. GENERAL INFORMATION ABOUT THE SUBJECT			
1.1. Title	**Computer architecture**	1.8. ISVU course code	201307, 202203 (PINF-9, PINF-9I)
1.2. Lecturer	Želimir Mikulić, senior lecturer	1.9. MOZVAG course code	
1.3. Assistants and/or associates	Milan Hrga, lecturer	1.10. Forms of teaching (number of hours Lecturing +Practical exercises + Seminars + e learning)	(30+30+0+0)
1.4. Study programme (specialist, undergraduate, graduate)	**Professional undergraduate study of Business Informatics**	1.11. Level of e- learning application (1st, 2nd, 3rd level), percentage of on line course performance (max. 20%)	1st – materials available On-line, (lectures recorded) 20%
1.5. Course status (mandatory, elective)	Mandatory	1.12. Number of course revisions	0.
1.6. Study year	1	1.13. Modernization	☐ yes ■ no
1.7. Credit score (ECTS)	5	1.14. Percentage estimate of course changes and/or supplements	Less than 20% ☐ More than 20 % ☐

2. COURSE DESCRIPTION	
2.1. Course objectives	This single semester course introduces students to the following: • Basics of digital technology, • Main computer building blocks according to von Neumann Architecture • Way how main computer components are built from combinational and sequential logical devices • Influence of computer hardware architecture on the performance. • Hardware/Software interface • How to applicate acquired knowledge in business praxis.

2.2. Terms of course entry and required competences	Four-year high school education completed; having a qualification at level 4.2. Required courses: Introduction to Computer Science
2.3. Learning outcomes on the study program level	LO1. Analyze conditions, identify opportunities and foresee problems which organizations and individuals meet then using information technologies.
	LO2. Evaluate and define steps in planning, decision making, operations and control then applying computer aided business and manufacturing.
	LO9. To individually and responsibly search and select relevant literature in Croatian and foreign languages, prepare papers and presentations for general and professional audience and critically evaluate presented professional topics.
	LO13. Rank security threats and select appropriate countermeasures to protect the information system.
	LO17. Conclude what are the basic principles and methods of quality project management and work successfully in a team

2.4. Expected learning outcomes on the course level

Learning outcomes towards Bloom's taxonomy: (up to two verbs per LO)	**LO Level:** *7. Recapture,* *8. Understanding,* *9. Application,* *10. Analysis,* *11. Evaluation,* 12. *Synthesis*
1. **Demonstrate** knowledge and understanding of course content **by defining and describing** basic topics in computer architecture	**4,5**
2. **Present** working principles of digital computers and how are they constructed from basic logic gates.	**4,5**
3. **Classify** basic building blocks of modern computers according to von Neuman's model and analyze their role	**4,5**
4. **Evaluate and recommend** computer components: processor, memory, bus organization, input-output and storage units, which serve best for specified tasks	**5,6**
5. **Judge** role of operating system in computer functioning, **establish conditions** for its installation	**4,5**
6. **Identify** and **argument** potential causes of lack of performance or deadlock in computer functioning.	**5,6**
7. **Critically** asses influence of processor type and frequency, ISA, memory subsystem (complete hierarchy) on configurations performance for specific task**.**	**5,6**
8. **Design** configuration out of standard components and **estimate** its performance	**5**
9.	
10.	

2.5. Course content according to detailed curriculum schedule

Constructive alignment

No:	Thematic ensemble / Lecture Topic	Course LO	Content / Teaching Method	Evaluation	Time needed (hours)
1.	Introduction to digital logic – phisical characteristics	1,2,3	Listen to the lecture and read the literature.	Checked by written test and oral exam: student can estimate influence of technology development on capabilities and performance of computers.	10
2.	Classes of Computers	1,8	Listen to the lecture and read the literature.	-"- : student can classify computers according to their architecture and role they are expected to play	4
3.	Performance, definition , measurements	1,7,8	Listen to the lecture, read the literature and solving exercises.	-"- : student can critically asses performance of computers.	12
4.	Instruction Set Architecture (ISA), RISC-CISC	1,2,4,7,8	Listen to the lecture, read the literature and solving exercises.	-"- : student can critically asses influence of each component on hardware/software performance	10

	5.	MIPS ISA, structure and formats, case study	1,2,4,7,8	Listen to the lecture + solving exercises. Working on simulator.	-"-	14
	6.	Instructions and Addressing: data and branches	1,4,6,7,8	Listen to the lecture + solving exercises. Working on simulator.	-"-	10
	7.	Processor	1,4,6,7,8	Listen to the lecture + solving exercises. Working on simulator.	-"-	10
	8.	Pipeline architecture	1,4,6,7,8	Listen to the lecture, read the literature and solving exercises.	-"-	10
	9.	Riscs	1,4,6,7,8	Listen to the lecture, read the literature and solving exercises.	-"-	10
	10.	Memory hierarchy	1,2,3,5,6,7,8	Listen to the lecture, read the literature and solving exercises.	-"-	8
	11.	Cache, performance	1,2,4,6,7,8	Listen to the lecture, read the literature and solving exercises.	-"-	8
	12.	Virtual memmory	1,2,4,6,7,8	Listen to the lecture, read the literature and solving exercises.	-"-	8
	13.	Storage units, RAID, SAN, NAS	1,2,4,5,6,7,8	Listen to the lecture, read the literature and solving exercises.	-"-	10
	14.	I/O Devices, Networks, Clustering	1, 2, 3, 5, 6, 7	Listen to the lecture, read the literature and solving exercises.	-"-	6
	15.	Role of Operation Systems, Future Development	1,5,6,7,8	Listen to the lecture. Performing installation on VM..	Checked during exercises and oral exam: student can select install operating system on configuration.	20

3. EVALUATION OF STUDENT WORK

3.1. Students` obligations

In accordance with the Book of Rules and the Rulebook on Student Assessment and Evaluation: for all regular students attend at least 70% attendance. Part-time students have the obligation to attend at least 50% of lectures through physical presence or via on-line attendance.

Students who have during the course:

- satisfied minimal attendance condition, may approach colloquium or written exam.
- past 50% score from all colloquium or from written exam (exam can be held in a regular or extraordinary exam period) may approach final oral exam
- past both written and oral exams receive grade and all ECTS credits for that course

3.2. Monitoring student work (enter the share of ECTS credits for each activity so that the total number of ECTS

Attendance	0.5	Written exam	2 (by submitting both colloquiums the student is relieved of an written examination)	Project	
Experimental work		Research		Practical work	

points corresponds to the credit score of the course)	Essay		Report		Continuous examination	
	Colloquium	2 (by submitting both colloquiums the student is relieved of a written exam)	Seminar paper		Other (inscribe)	
	Class activities	0.5	Oral exam	2 (by submitting both colloquiums the student is relieved of an oral examination)	Other (inscribe)	

3.3. Student workload

The student's workload on all bases amounts to 1 ECTS point for 30 hours of work per semester and is estimated as:

Commitment	***Hours (estimate)***
4. Attending classes	60
5. Preparation for the lectures and exercises	30
6. Preparation for the exam through self-study	60

4. GRADING

4.1. Seminar paper grading

4.2. Colloquium / exam grading

Poor	**Satisfying**	**Above average**
Give answer by memory, no deeper understanding. Does not know and does not apply the basic terms and concepts. Cannot apply or explain the contents of the course.	Reproduces basic terms, without difficulty transfers new knowledge, understands subject matter, explains the terms and the notions that substantiate by examples.	Knowledge is at the level of analysis, synthesis and evaluation. It observes legitimacy, accurately and thoroughly explains the content of the subject, and logically links and explains the terms and concepts that it encapsulates. Find solutions that are not originally given. There is a correlation with correlative subjects.

4.3. Creating a final grade according to evaluation elements

Attendance and active participation in the lessons	70-75% of attendance	76-86% of attendance	87-100% of attendance	Activity in class
	2 points	5 points	10 points	+10 points
Colloquium / written exam	2	3	4	5
	50-64,9%	65-79,9%	80-89,9%	90-100%
	25 points	30 points	35 points	40 points
Oral exam	2	3	5	5

		25 points	30 points	35 points	40 points

4.4. Creating a final grade according to absolute allocation		Percentage of adopted knowledge, skills and competences (teaching + final exam)	Numerous grade	ECTS grade	
		88 – 100%	5 (excellent)	A	
		78 – 87.9%	4 (very good)	B	
		62 – 77.9%	3 (good)	C	
		50 – 61,9%	2 (sufficient)	D	
		0 – 49.9%	1 (unsufficient)	F	

5. ADDITIONAL INFORMATION ABOUT THE COURSE

		Title	Number of copies in the library	Availability via other media
5.1. Compulsory literature (available in the library and through other media)	2.	S.Ribarić: Građa računala - arhitektura i organizacija računarskih sustava, Algebra, Zagreb 2011, ISBN 978-953-322-074-1	5	-
	3.	D. Petterson, J.Hennessy: Computer Organisation and Deign, 4rd ed., Morgan Kaufmann, 2011.	1	Available On-line
5.2. Additional literature (at the moment of changes and/or amended of study programme)	5.	I.Englander: The Architecture of Computer Hardware, Systems Software & Networking, 4th ed., John Wiley & Sons, 2010	1	e-learning - pdf
5.3. Quality assurance methods that ensure the acquisition of knowledge, skills and competences	The control of students' work quality and the acquisition of necessary knowledge and skills will be ensured through interactive work. By keeping track of attendance and student activity during classes and provided information on students` progress through short colloquiums and homework, information for further guidance to students will be provided in order to increase the efficiency of their work. Students will be informed about their rights and obligations as well as the methods of work and the required literature. Indicators of quality assurance system: Student survey, monitoring of annual data from the Croatian employment service on the annual state of student employment, surveys from employers and Alumni association.			
5.4. information on the course and contact with the teacher	It is obligatory for every student to regularly inform about the course, teaching and teaching activities. All information about teaching or any delay in teaching will be published on the e-learning pages of the course and on the web pages of the Polytechnic. Students can contact the teachers during the consultation term (at least one hour per week), while brief questions and explanations can be addressed during classes. It is possible to ask questions by e-mail (from the official e-mail address from the domain @ vus.hr) that will be answered in a short time (no later than five working days from the receipt of e-mail).			

1. GENERAL INFORMATION ABOUT THE SUBJECT			
1.1. Title	**Introduction to web technologies**	1.8. ISVU course code	146371
1.2. Lecturer	Milan Hrga mag.ing.comp.,lec.	1.9. MOZVAG course code	
1.3. Assistants and/or associates		1.10. Forms of teaching (number of hours Lecturing +Practical exercises + Seminars + e learning)	(30+30+0+0)
1.4. Study programme (specialist, undergraduate, graduate)	**Professional Undergraduate Study of Business Informatics**	1.11. Level of e- learning application (1st, 2nd, 3rd level), percentage of on line course performance (max. 20%)	3. razina – materijali dostupni On-line, polaganje kolokvija i pismenog ispita na računalu 0%
1.5. Course status (mandatory, elective)	Elective	1.12. Number of course revisions	0
1.6. Study year	1st	1.13. Modernization	■ Yes □ No
1.7. Credit Score (ECTS)	5	1.14. Percentage estimate of course changes and/or supplements	Less than 20% ■ More than 20 % □

2. COURSE DESCRIPTION	
2.1. Course objectives	The aim is that students acquire basic knowledge about Object Oriented Programming
2.2. Terms of course entry and required competences	Finished high school, qualification of level 4.2. based HKO

2.3. Learning outcomes on the study programme level	LO4. Evaluate different digital channels in marketing campaigns and create and implement a digital marketing plan LO5. Interpret mechanisms of data flow control, error control and fragmentation, ways of multiplexing data transmission using routing methods in computer networks LO9. Select appropriate professional literature in Croatian and foreign language, prepare and independently present presentations in Croatian and foreign language to expert and general audiences, and critically evaluate the presented professional topics LO12. Apply key aspects of information technology (programming, algorithms, data structures, databases and project management in the field of information technology) LO15. Compare and select appropriate development tools at expert level	
2.4. Expected learning outcomes on the course level	**Learning outcomes** towards Bloom's taxonomy: (up to two verbs per LO)	**LO Level:** *1. Recapture,* *2. Understanding,* *3. Application,* *4. Analysis,* *5. Evaluation,* *6. Synthesis*
	1. Distinguish between web page formatting languages (HTML 4 and 5, XHTML, CSS 2 and 3, JavaScript) and introduce them through their theoretical and practical dimensions and in the wider context of markup languages 2. Create a web site tailored to the needs of different viewing widths in the Internet browser or according to different media	1,2,3,4,5,6
	3. Write the code in (X) HTML, JavaScript and CSS and design a website that will meet the requirements of W3C validation, modern coding of characters displaying, basic design and functionality, and standards of the semantic web	2,3,4,5,6
	4. Design a web page and arrange building elements on it in different technologies using: tables, frames, edges, positioning, floats and grids	2,3,4,5,6
	5. Compare criteria for determining the quality of web pages (evaluation and validation tests)	2,3,4,5,6
	6. Evaluate the direction in which web-based data display technology is evolving through HTML5 and CSS3	2,3,4,5,6
	7. Integrate multiple web pages into a network hub and link them with absolute and relative links	2,3,4,5,6
	8. Prepare and optimize images and photos for the web site and choose the appropriate format	2,3,4,5,6
	9. Formulate keywords and set up web page metadata	2,3,4,5,6
	10. Design a horizontal or vertical menu, adjust it to content, and know how to decode it	2,3,4,5,6

2.5. Course content according to detailed curriculum schedule

Constructive alignment

No:	Thematic ensemble / Lecture Topic	Course LO	Content / Teaching Method	Evaluation	Time needed
1	Introduction to the course and a detailed teaching plan.	-	Listen to the lecture	-	2 hours
	Web History and Standards and Languages for the Web	1	Listen to the lecture, work on the computer, reading litearature.	Describe the essential standards of the web in the context of historical development Understand the basics of essential web technologies Explain the impact of the web on social change	11 hours
2.	Basics of web pages building. Website design technologies	1,2,3,4	Listen to the lecture, work on the computer, reading litearature.	Explain HTTP protocol and client communication with the server Explain the organization of domain space Identify the domain registration process Identify site prerequisites.	13 hours
3.	Marketing Aspects in Website Design	1,2,3	Listen to the lecture, work on the computer, reading litearature.	Explain the primary goals of the site. Explain the secondary goals of the site. Identify site categories and their structure. Determine the importance and role of the elements of a website by a given goal.	13 hours

	4.	Basic syntax. Absolute and relative links.	1,2,3,4	Listen to the lecture, work on the computer, reading litearature.	Identify the structure (elements) of the HTML document.	13 hours
	5.	Introduction to HTML5	1,2,3,4,5,6	Listen to the lecture, work on the computer, reading litearature.	Format a simple HTML document and display it in an Internet browser.	13 hours
	6.	Introduction to CSS3	1,2,3,4,5,6	Listen to the lecture, work on the computer, reading litearature.	Create a simple CSS declaration and embed it in an HTML document. Create simple CSS rules and embed them in an HTML document.	13 hours
	7.	Website layout and basic design	3,4,5,6	Listen to the lecture, work on the computer, reading litearature.	Develop a basic design and layout of elements on a web page by default. Arrange page elements using relative and absolute positioning. Position the elements of the page using float.	13 hours
	8.	Creating horizontal and vertical menus	3,4,5,6	Listen to the lecture, work on the computer, reading litearature.	Create vertical and horizontal navigation bars.	13 hours
	9.	Introduction to JavaScript	1,2,3,4,5,6,7	Listen to the lecture, work on the computer, reading litearature.	Apply a way to write JavaScript commands. Include written JavaScript code in an HTML document. Correct errors in written code.	13 hours
	10.	Introduction to JavaScript	1,2,3,4,5,6,7	Listen to the lecture, work on the computer, reading litearature.	Apply basic JavaScript language syntax (function operators, flow control). Create a simple web form in JavaScript.	13 hours
	11.	Responsive Website Design Technology (RWD)	5,6,7,8,9,10	Listen to the lecture, work on the computer, reading litearature.	Differentiate responsive from static design. Explain the use of relative dimensions in web design. Identify differences in display across devices and be familiar with good practices in responsive web design. Apply document preview types and different display tools when creating responsive websites.	13 hours
	12.	Image navigation and image manipulation	5,6,7,8,9,10	Listen to the lecture, work on the computer, reading litearature.	Create image navigation. Create a code to display the image. Customize image content to display on the default page.	13 hours
	13.	Multimedia content	5,6,7,8,9,10	Listen to the lecture, work on the computer, reading litearature.	Import additional content (video elements, audio elements, geolocation content) using HTML5 language commands. Convert Flash content to HTML5.	13 hours
	14.	Web browser development tools	5,6,7,8,9,10	Listen to the lecture, work on the computer, reading litearature.	Use web development tools with functionality to control, analyze and debug html, css and / or java scripts (Mozilla Firebug, Chrome Inspect Elements)	13 hours
	15.	Future-learning technologies	5,6,7,8,9,10	Listen to the lecture, work on the computer, reading litearature., individual preparation for colloquium	Optimize and evaluate your site. Conduct activities aimed at raising search engine page traffic.	13 hours

3. EVALUATION OF STUDENT WORK

3.1. Student's obligations

In accordance with the ***Book of Rules and the Rulebook on Student Assessment and Evaluation***: for all regular students attend at least 70% attendance. Part-time students have the obligation to attend at least 50% of lectures. All students must create, present and positively colloquy seminar paper.
Students who have during the course achieved:

- From 0 – 24,9% ECTS credits- is rated F (unsuccessful) and cannot get ECTS credits and must re-enrol the subject in the next academic year;
- From 25 – 49,9% ECTS credits - is rated FX (inadequate) and has to come out and pass the test (exam). A written exam can be held in a regular or extraordinary exam period;
- More than 50% ECTS credits - students have the right to access the final exam of the subject.

Students can pass the final exam in two ways: a) during the course through continuous student attendance (active participation in the lessons, solving case studies, making and presenting the seminar paper and passing two colloquia); b) during the course (active participation in the lessons, solving case studies, creating and presenting the seminar paper) and passing the exam (written and oral exam).

3.2. Monitoring student work (enter the share of ECTS credits for each activity so that the total number of ECTS points corresponds to the credit score of the course)

Attending classes	2	Written exam	2 (no midterm)	Project	
Experimental work		Research		Practical work	2
Essay		Report		Continuous checking	
Colloquium	2 (without writing or oral exam)	Seminar paper		Other (inscribe)	
Class activities		Oral exam	1 (without midterm)	Other (inscribe)	

3.3. Student workload

The student's workload on all bases amounts to 1 ECTS point for 30 hours of work per semester and is estimated as:

	Commitment	***Hours (estimate)***
7.	Attending classes	30
8.	Creating and Presenting seminar paper	60
9.	Preparation for the Colloquium / exam through self-study	95

4. GRADING

4.1. Seminar paper grading

Valuation Element	**Poor**	**Satisfiying**	**Above average**
Organization			
Terminology, writing style			
Quoting and referencing			

4.2. Colloquium / exam grading	**Poor**	**Satisfying**	**Above average**
	Gives answer by memory, no deeper understanding. Does not know and does not apply the basic terms and concepts. Cannot apply or explain the contents of the course.	Reproduces basic terms, without difficulty transfers new knowledge, understands subject matter, explains the terms and the notions that substantiate by examples.	Knowledge is at the level of analysis, synthesis and evaluation. It observes legitimacy, accurately and thoroughly explains the content of the subject, and logically links and explains the terms and concepts that it encapsulates. Find solutions that are not originally given. There is a correlation with correlative subjects.

4.3. Creating a final grade according to evaluation elements					
	Active participation in the lessons	70-75% attendance	76-86% attendance	87-100% attendance	
		4 points	7 points	10 points	
	Practice	2	3	4	5
		5 bodova	7 bodova	8 bodova	10 bodova
	Colloquium / written exam	2	3	4	5
		50-64,9%	65-79,9%	80-89,9%	90-100%
		25 points	30 points	35 points	40 points
	Oral exam	2	3	5	5
		25 points	30 points	35 points	40 points

4.4. Creating a final grade according to absolute allocation	Percentage of adopted knowledge, skills and competences (teaching + final exam)	Numerous grade	ECTS grade
	90 – 100%	5 (excellent)	A
	80 – 89,9%	4 (very good)	B
	65 – 79,9%	3 (good)	C
	60 – 64,9%	2 (sufficient)	D
	50 – 59,9%	2 (sufficient)	E

5. ADDITIONAL INFORMATION ABOUT THE COURSE

5.1. Compulsory literature (available in the library and through other media)	Title	**Number of copies in the library**	**Availability via other media**
	1. Reviewed script from the course, available on the e-learning system		Available on-line
	2. W3Schools e-tutorials on HTML, XHTML, and CSS (available at: http://www.w3schools.com).		Available on-line

5.2. Additional literature (at the moment of changes and/or amended of study programme)	6. M. MacDonald, HTML5 - The Missing Manual, O'Reilly, 2014. 7. D.S.McFarland, CSS3 - The Missing Manual, O'Reilly, 2013.		Available on-line
5.3. Quality assurance methods that ensure the acquisition of knowledge, skills and competences	Quality control of students' work and the acquisition of necessary knowledge and skills will be ensured through interactive work. Keeping records of students' attendance and activity in the classroom and information obtained about student progress through the midterm will provide the information needed for further guidance to students in order to increase their work efficiency. Students will be instructed in their rights and obligations as well as working methods and required literature. Quality assurance system indicators: Student survey, monitoring of annual data from the CES at the annual employment status of students, employer surveys and Alumni Association.		
5.4. information on the course and contact with the teacher	It is the obligation of each student to be regularly informed about the course, the coursework and the classroom activities. All notices of classes or possible adjournment will be published in a timely manner on the e-learning site of the course and on the website of the Polytechnic. Students can contact teachers during the consultation period (at least one hour per week), while for short questions and explanations they can be contacted during class. It is also possible to ask questions by e-mail (from the official e-mail address at @ vus.hr), which will be answered as soon as possible (no later than five working days after receiving the e-mail).		

1. GENERAL INFORMATION ABOUT THE SUBJECT			
1.1. Title	Information technologies and environmental protection	1.8. ISVU course code	202205
1.2. Lecturer	Tanja Radić Lakoš, MSc, s.lec.	1.9. MOZVAG course code	
1.3. Assistants and/or associates	None	1.10. Forms of teaching (number of hours Lecturing +Practical exercises + Seminars + e learning)	(30+0+15+0)
1.4. Study programme (specialist, undergraduate, graduate)	**Professional Undergraduate study of Business Informatics**	1.11. Level of e- learning application (1st, 2nd, 3rd level), percentage of on line course performance (max. 20%)	1st – materials available On-line, 0%
1.5. Course status (obligatory, optional)	Obligatory	1.12. Number of course revisions	4.
1.6. Study year	1st	1.13. Modernization	■ yes □ no
1.7. Credit score (ECTS)	3	1.14. Percentage estimate of course changes and/or supplements	Less than 20% ■ More than 20 % □

2. COURSE DESCRIPTION	
2.1. Course objectives	The aim is that student, based on theoretical knowledge and case studies, be able to: • Define basic ecological and environmental concepts; • Understand the principles of natural resource management and the principles of sustainable development; • Learn to Identify the damage that business systems can cause to natural ecosystems thus giving priority to the integrated development of business systems and society as a whole through the application of sustainable development policy • Apply the learned content of this course in business practice.

2.2. Terms of course entry and required competences	Four-year high school education completed; having a qualification at level 4.2	
2.3. Learning outcomes on the study programme level	LO1: To analyze the situation, identify opportunities and anticipate problems faced by organizations and individuals in the application of information technologies LO9: Select appropriate professional literature in Croatian and foreign language, prepare and independently present presentations in Croatian and foreign language to expert and general audiences, and critically evaluate the presented professional topics LO10: To support and apply ethical and environmental principles as well as legislation and standards that are applicable in information technologies	
2.4. Expected learning outcomes on the course level	**Learning outcomes** towards Bloom's taxonomy: (up to two verbs per LO)	**LO Level:** *13. Recapture,* *14. Understanding,* *15. Application,* *16. Analysis,* *17. Evaluation,* 18. *Synthesis*
	1. to demonstrate knowledge and understanding of the content of the course by defining and describing the basic concepts in environmental protection,	1, 1
	2. to analyze and compare the relationship between man and his environment in the historical and contemporary context,	4, 2
	3. It will also provide an example of various anthropogenic impacts on natural ecosystems and parts of the environment (especially the energy sector's impact and waste management) and	3, 2
	4. Give an example of measures how to reduce negative impacts on the environment,	3
	5. Discuss and critically evaluate the performance of managers in accordance with the principles of sustainability and accountability,	4, 5
	6. recommend sustainable environmental management measures in business organizations,	5
	7. Use materials and tools to search scientific and professional literature in the mother tongue and in English,	3
	8. Present adopted knowledge, ideas, problems and solutions independently and in the team.	6

2.5. Course content according to detailed curriculum schedule

Constructive alignment

No:	Thematic ensemble / Lecture Topic	Course LO	Content / Teaching Method	Evaluation	Time needed
16.	Introduction to the course and a detailed performance plan	-	Listen to the lecture. On seminary teaching, by independent work on the computer students get acquainted with course content and documents on the e-learning course page.	-	2 hours
	Nature and environment protection. Contemporary environmental problems.	1, 2, 3	Listen to the lecture and read the literature. They use multimedia and networking.	At the colloquium or the written and oral exam they can define the terms nature / environment; nature protection / environmental protection; conservationism and sustainable development and explain the approach to environmental protection in traditional and modern societies. They can give an example of contemporary environmental problems.	4 hours

	17.	Environmental pollution and degradation. Natural and anthropogenic environmental degradation	1, 2, 3, 4, 5, 6, 7, 8	Listen to the lecture and read the literature. They use multimedia and networking. In seminary classes, individually, in pairs or in Socratic triplets, they create a mental map and solve case studies, showing the acquisition of previously acquired knowledge and presenting acquired knowledge and ideas, discussing problems.	At the colloquium or the written and oral exam they can define what environmental degradation is and how it occurs, give an example of environmental degradation to individual parts of the environment, analyze and conclude how environmental degradation occurs and compare how the IT sector causes environmental degradation A mental map created. Solved case study.	4 hours
	18.	Anthropogenic causes of environmental degradation and performance reduction measures.	1, 3, 4, 5, 6, 7, 8	Listen to the lecture and read the literature.. At the seminar teaching, they individually explore the content of this topic area by searching the database, and on the basis of it and reading the literature, create a seminar paper that presents the acquired knowledge and presents their own ideas, and ways to solve problems. In the group work on seminar teaching, the brainstorming method and the discussion method on the topic are applied.	At the colloquium or written and oral exam they can explain anthropogenic causes of environmental degradation, they can predict and give an example of anthropogenic impacts on different natural ecosystems and parts of the environment, know how to set measures to reduce negative environmental impacts and recommend measures for the sustainable management of natural resources.	4 hours
	19.	Development of environmental policies (path to sustainability)	1, 2	Listen to the lecture and read the literature.	At the colloquium or the written and oral exam they can explain the historical and contemporary context of environmental protection and different approaches to the problem of environmental protection (technocentric / ecocentric)	6 hours
	20.	Sustainable development. Elements of sustainable development. Environmental education	1, 2, 5, 6	Listen to the lecture and read the literature.	At the colloquium or the written and oral exam, they can explain the elements of the magic triangle of sustainable development and propose a change in the principles of sustainability in their environment (family, business, social), following the principles of Agenda 21, the Millennium Goals and Agenda 2020 and 2030	6 hours
	21.	Sectoral environmental pressures. Environmental toxins.	1, 3, 4, 5, 6, 7, 8	Listen to the lecture and read the literature.. At the seminar teaching, they individually explore the content of this topic area by searching the database, and on the basis of it and reading the literature, create a seminar paper that presents the acquired knowledge and presents their own ideas, and ways to solve problems. In the group work on seminar teaching, the brainstorming method and the discussion method on the topic are applied.	At the colloquium or the written and oral exam they can explain the types of toxins in the environment, the expansions and give an example of measures to reduce the negative effects of intoxication. Explain the impact of EMF and noise on human health and the environment	4 hours

	22.	Spatial planning. Intervention in the environment. Environmental Impact Assessment. Environmental impact studies.	1, 2, 5, 6	Guest lecture. They listen to a lecture and participate in a discussion.		2 hours
	23.	Urbanization and demographic expansion as an environmental problem.	1, 2, 3, 4, 5, 6, 7, 8	Listen to the lecture and read the literature. At the seminar teaching, they individually explore the content of this topic area by searching the database, and on the basis of it and reading the literature, create a seminar paper that presents the acquired knowledge and presents their own ideas, and ways to solve problems. In the group work on seminar teaching, the brainstorming method and the discussion method on the topic are applied	At the colloquium or the written and oral exam they can explain the concept and consequences of urbanization and give an example of reducing the negative effects of urbanization on the environment; explain the concept and consequences of demographic expansion and give an example of reducing the negative effects of demographic expansion on the environment	4 hours
	24.	Air pollution and degradation. Anthropogenically caused climate change.	1, 5, 6, 7, 8	Listen to the lecture and read the literature. At the seminar teaching, they individually explore the content of this topic area by searching the database, and on the basis of it and reading the literature, create a seminar paper that presents the acquired knowledge and presents their own ideas, and ways to solve problems. In the group work on seminar teaching, the brainstorming method and the discussion method on the topic are applied	At the colloquium or the written and oral exam they can define and describe the basic concepts of air pollution, enumerate and distinguish between natural and anthropogenic sources of air pollution, anticipate the effects of polluted air and the consequences of phenomena such as: greenhouse effect, global warming, climate change, acid rain, ozone depletion, , to analyze the impact of air pollution on the atmosphere, human health, wildlife and material heritage. Seminar paper created and presented (using computer programs independently).	10 hours
	25.	Conventional energy sources. RES.	1, 4, 5, 6, 7, 8	At the seminar teaching, they individually explore the content of this topic area by searching the database, and on the basis of it and reading the literature, create a seminar paper that presents the acquired knowledge and presents their own ideas, and ways to solve problems. In the group work on seminar teaching, the brainstorming method and the discussion method on the topic are applied	At the colloquium or the written and oral exam they can define and describe the types of fossil fuels and RES and choose and comment on the most environmentally friendly solution and recommend measures of environmental and energy efficiency. Seminar paper created and presented (using computer programs independently).	10 hours
	26.	Waste management.	1, 4, 5, 6, 7, 8	Listen to the lecture and read the literature. They use multimedia and networking At the seminar teaching, they individually explore the content of	At the colloquium or the written and oral exam they can define and describe the types and origins of waste and choose and comment on the most environmentally friendly solution for waste management.	10 hours

				this topic area by searching the database, and on the basis of it and reading the literature, create a seminar paper that presents the acquired knowledge and presents their own ideas, and ways to solve problems. In the group work on seminar teaching, the brainstorming method and the discussion method on the topic are applied	Seminar paper created and presented (using computer programs independently).	
	27.	Development of low-waste technologies.	1, 4, 5, 6	Listen to the lecture and read the literature..	At the colloquium or the written and oral exam, they can explain the application of low-tech technologies in modern business, compare purification technologies at the end and at the beginning of the production process, and discuss the acquired knowledge critically and socially responsibly.	4 hours
	28.	Development Management Tools: EMS, ISO 14000, Eco-labeling.	1, 4, 5, 6	Listen to the lecture and read the literature..	At the midterm or the written and oral exam, they can explain the use of resource management tools.	4 hours
	29.	Concluding Considerations / Repetition and Exam Preparation.		Listen to a lecture and prepare individually for the exam.		16 hours
	30.				-	

3. EVALUATION OF STUDENT WORK

3.1. Students` obligations	In accordance with the Book of Rules and the Rulebook on Student Assessment and Evaluation: for all regular students attend at least 70% attendance. Part-time students have the obligation to attend at least 50% of lectures. All students must create, present and positively colloquy seminar paper. Students who have during the course achieved: • From 0 – 24,9% ECTS credits- is rated F (unsuccessful) and cannot get ECTS credits and must re-enrol the subject in the next academic year; • From 25 – 49,9% ECTS credits - is rated FX (inadequate) and has to come out and pass the test (exam). A written exam can be held in a regular or extraordinary exam period; • More than 50% ECTS credits - students have the right to access the final exam of the subject. Students can pass the final exam in two ways: a) during the course through continuous student attendance (active participation in the lessons, creating mental map, solving case studies, making and presenting the seminar paper and passing two colloquia); b) during the course (active participation in the lessons, creating mental map, solving case studies, creating and presenting the seminar paper) and passing the exam (written and oral exam).					
3.2. Monitoring student work (enter the share of ECTS credits for each activity so that the total number of ECTS points corresponds to the credit score of the course)	Attendance		Written exam	1 (by submitting both colloquiums the student is relieved of an written examination)	Project	
	Experimental work		Research		Practical work	
	Essay		Report		Continuous examination	

	Colloquium	2 (by submitting both colloquiums the student is relieved of a written and oral examination)	Seminar paper	0,5	Other (inscribe)	
	Class activities	0,5	Oral exam	1 (by submitting both colloquiums the student is relieved of an oral examination)	Other (inscribe)	

3.3. Student workload

The student's workload on all bases amounts to 1 ECTS point for 30 hours of work per semester and is estimated as:

Commitment	***Hours (estimate)***
10. Attending classes	45
11. Creating and Presenting seminar paper	10
12. Preparation for the Colloquium / exam through self-study	35

4. GRADING

4.1. Seminar paper grading

Valuation Element	**Poor**	**Satisfying**	**Above average**
Organization	The paper is not organized in a logical order and its structure is lacking.	The paper is well structured with a clear distinction between the introduction, the main part of the text and the conclusion.	The paper is well-structured with a clear distinction between the introduction, the main part of the text and the conclusions that are perfectly logically linked to one another
Terminology, writing style	Words and phrases are low harmonized with official terminology. Writing style is not appropriate, sentences are too long, modest vocabulary, and frequent and repeated grammatical mistakes.	Words and phrases are aligned with official terminology. The writing style is appropriate, the sentence structure is clear, the vocabulary is appropriate and has little grammatical errors.	Words and phrases are aligned with official terminology and show an understanding of their meaning. The writing style is excellent, the sentences are clear and concise, the vocabulary is rich and there are no grammatical errors.
Quoting and referencing	Sources are not specified at all. The references do not match the topic and show a superficial approach to the research topic.	Sources are listed, but incomplete and with errors. The references are appropriate for the subject and show a satisfactory research attitude.	Sources are accurate, complete and consistent. The references are appropriate, their list is "rich" and comprehensive and shows a robust research approach.

4.2. Colloquium / exam grading

Poor	**Satisfying**	**Above average**
Give answer by memory, no deeper understanding. Does not know and does not apply the basic terms and concepts. Cannot apply or explain the contents of the course.	Reproduces basic terms, without difficulty transfers new knowledge, understands subject matter, explains the terms and the notions that substantiate by examples.	Knowledge is at the level of analysis, synthesis and evaluation. It observes legitimacy, accurately and thoroughly explains the content of the subject, and logically links and explains the terms and concepts that it encapsulates. Find solutions that are not originally given. There is a correlation with correlative subjects.

Active participation in the lessons	70-75% of attendance	76-86% of attendance	87-100% of attendance	Created mental map. Solved case study.

4.3. Creating a final grade according to evaluation elements		2 points	4 points	7 points	3 points
	Seminar paper	2	3	4	5
		5 points	7 points	8 points	10 points
	Colloquium / written exam	2	3	4	5
		50-64,9%	65-79,9%	80-89,9%	90-100%
		25 points	30 points	35 points	40 points
	Oral exam	2	3	5	5
		25 points	30 points	35 points	40 points

4.4. Creating a final grade according to absolute allocation	Percentage of adopted knowledge, skills and competences (teaching + final exam)	Numerous grade	ECTS grade
	90 – 100%	5 (excellent)	A
	80 – 89,9%	4 (very good)	B
	65 – 79,9%	3 (good)	C
	60 – 64,9%	2 (sufficient)	D
	50 – 59,9%	2 (sufficient)	E

5. ADDITIONAL INFORMATION ABOUT THE COURSE

	Title	Number of copies in the library	Availability via other media
5.1. Compulsory literature (available in the library and through other media)	1. Radić Lakoš, T., Upravljanje okolišem, VUŠ, Šibenik, 2018. (selected chapters)		Available On-line
	2.		
5.2. Additional literature (at the moment of changes and/or amended of study programme)	1. Glavač, V., Uvod u globalnu ekologiju, Hrvatska sveučilišna naklada, Zagreb, 2001. 2. Udovičić, B., Čovjek i okoliš, Kigen, Zagreb, 2009. 3. Tišma, S., Maleković, S., Zaštita okoliša i regionalni razvoj, iskustva i perspektive, Institut za međunarodne odnose, Zagreb, 2010. 4. Strategija održivog razvitka RH, NN 30/2009.	5 2	Available On-line
5.3. Quality assurance methods that ensure the acquisition of knowledge, skills and competences	The control of students' work quality and the acquisition of necessary knowledge and skills will be ensured through interactive work. By keeping track of attendance and student activity during classes and provided information on students` progress through short colloquiums and homework, information for further guidance to students will be provided in order to increase the efficiency of their work. Students will be informed about their rights and obligations as well as the methods of work and the required literature. Indicators of quality assurance system: Student survey, monitoring of annual data from the Croatian employment service on the annual state of student employment, surveys from employers and Alumni association.		
5.4. information on the course and contact with the teacher	It is obligatory for every student to regularly inform about the course, teaching and teaching activities. All information about teaching or any delay in teaching will be published on the e-learning pages of the course and on the web pages of the Polytechnic. Students can contact the teachers during the consultation term (at least one hour per week), while brief questions and explanations can be addressed during classes. It is possible to ask questions by e-mail (from the official e-mail address from the domain @ vus.hr) that will be answered in a short time (no later than five working days from the receipt of e-mail).		

1. GENERAL INFORMATION			
1.1. Course lecturer	Ana Perišić	1.8. Course code in ISVU	146563
1.2. Course title	**Mathematics**	1.9. Course code in MOZVAG	
1.3. Assistants and/or associates		1.10. Forms of teaching (number of hours Lecturing +Practical exercises + Seminars + e learning)	(30+30+0+0)
1.4. Study programme (specialist, undergraduate, graduate)	Undergraduate Professional Study of Business informatics	1.11. Level of e- learning application (1st, 2nd, 3rd level), percentage of on line course performance (max. 20%)	1st, course materials are on-line, 0%
1.5. Course status (mandatory, elective)	Mandatory	1.12. Number of course revisions	1
1.6. Year of study	1st	1.16. Modernization	Yes
1.7. Credit score (ECTS)	6	1.14. Percentage estimate of course changes and/or supplements	Less than 20% X□ More than 20 % □

2. COURSE DESCRIPTION		
2.1. Course objectives	Introducing students to the fundamental concepts of linear algebra and functions of single variable, which they can apply in different economics courses. Adopting analytical skills, logical and critical thinking skills.	
2.2. Terms of course entry and required competences	4 year secondary education completed; qualification level 4.2 according to the CROQF.	
2.3. Learning outcomes on the study programme level	LO6. Correctly write and interpret basic concepts in the field of economics and economics of enterprises, entrepreneurs and entrepreneurship and correctly interpret their interdependencies LO7: select and apply mathematical methods, models and techniques that are appropriate for solving problems in the area of information and business systems LO16: valorize elevant factors that affect organization`s and individual`s business and apply basic methods and concepts of planning, management and accounting of business	
2.4. Expected learning outcomes on the course level	**Learning outcomes** accroding to the Bloom`s taxonomy: (up to two verbs per LO)	**Level of LO:** *1- remembering,* *2- understanding,* *3- application,* *4-analysis,* *5-evaluation,* *6-synthesis*
	19. Perform fundamental operations on sets	4
	20. Carry out fundamental operations on matrices	4

21. Propose a method and solve systems of linear equations;	5,4	
22. Conduct basic analysis of functions of one variable	4	
23. Apply linear algebra and functional analysis methods in economic problems solving	3,4	

2.5. Course content according to detailed curriculum schedule

Constructive alignment

no	Thematic unit	LO of the course	Content/teaching methods	Evaluation	Time	
1.	Introduction into the course and detailed plan. Introduction to set theory.	1	Attending lectures. Familiarize with course content, e-learning documents, literature and students' obligations.	Students perform fundamental operations on sets through colloquia or written/oral exams.	1 h 3h 8h	
2.	Matrices: definitions, properties and calculus.	2	Attending lectures. Actively involving students through problem solving and discussion.	Students carry out fundamental operations on matrices through colloquia or written/oral exams.	4h 8h	
3.	Determinants: definition and calculus	2	Attending lectures. Actively involving students through problem solving and discussion.	Students carry out fundamental operations on matrices through colloquia or written/oral exams.	4h 8h	
4.	Inverse matrix. Matrix equations.	2	Attending lectures. Actively involving students through problem solving and discussion.	Students carry out fundamental operations on matrices through colloquia or written/oral exams.	4h 8h	
5.	Systems of linear equations. Cramer rule. Matrix equations.	3,5	Attending lectures. Actively involving students through problem solving and discussion.	Students will propose a method and solve systems of linear equations; they will apply linear algebra methods in economic problems solving through colloquia or written/oral exams.	4h 8h	
6.	Systems of linear equations. Gaussian elimination.	3,5	Attending lectures. Actively involving students through problem solving and discussion.	Students will propose a method and solve systems of linear equations; they will apply linear algebra methods in economic problems solving through colloquia or written/oral exams.	4h 8h	
7.	Matrix calculus. Application in economics. Exam preparation	2, 3,5	Attending lectures. Actively involving students through problem solving and discussion. Group problem solving and discussion.	Students will carry out fundamental operations on matrices, propose a method and solve systems of linear equations; they will apply linear algebra methods in economic problems solving through colloquia or written/oral exams.	4h 8h	
8.	Functions. Definition, properties.	4	Attending lectures. Actively involving students through problem solving and discussion.	Students will conduct basic analysis of functions of one variable through colloquia or written/oral exams.	4h 8h	
9.	Elementary functions. Domain.	4	Attending lectures. Actively involving students through problem solving and discussion.	Students will conduct basic analysis of functions of one variable through colloquia or written/oral exams.	4h 8h	

	10.	Elementary functions.	4	Attending lectures. Actively involving students through problem solving and discussion.	Students will conduct basic analysis of functions of one variable through colloquia or written/oral exams.	4h 8h	
	11.	Limit of a function. Asymptote.	4	Attending lectures. Actively involving students through problem solving and discussion.	Students will conduct basic analysis of functions of one variable through colloquia or written/oral exams.	4h 8h	
	12.	The derivative of a function	4, 5	Attending lectures. Actively involving students through problem solving and discussion.	Students will conduct basic analysis of functions of one variable, they will apply functional analysis methods in economic problems solving through colloquia or written/oral exams.	4h 8h	
	13.	Monotonicity and local extrema.	4,5	Attending lectures. Actively involving students through problem solving and discussion.	Students will conduct basic analysis of functions of one variable, they will apply functional analysis methods in economic problems solving through colloquia or written/oral exams.	4h 8h	
	14.	Function graphs	4, 5	Attending lectures. Actively involving students through problem solving and discussion.	Students will conduct basic analysis of functions of one variable, they will apply functional analysis methods in economic problems solving through colloquia or written/oral exams.	4h 8h	
	15.	An application of functional analysis in economics. Exam preparation	4, 5	Attending lectures. Actively involving students through problem solving and discussion. Group problem solving and discussion.	Students will conduct basic analysis of functions of one variable, they will apply functional analysis methods in economic problems solving through colloquia or written/oral exams.	4h 8h	

3. EVALUATION OF STUDENTS` WORK

3.1. Students` obligations	In accordance with the Regulations on Studying and the Regulations on Student Assessment and Evaluation: for all full-time students attendance of at least 70%. Part-time students are required to attend classes at least 50%. All students are required to carry calculator and formulae list. Students who have during the course achieved: • from 0 - 24,9% ECTS credits- are rated F (unsuccessful) and cannot obtain ECTS credits, and must re-enroll in the next academic year; • from 25 - 49,9% - are assessed by FX (insufficient) and must pass the written exam (test). Written exam (test) can be held in a regular or extraordinary exam period; • more than 50% - students have the right to take the final exam. Students can take the final exam from the course in two ways: a) during the course of teaching through continuous monitoring of students (active participation in classes and through two colloquia); b) by passing the exam (written and oral part of the exam).					
3.2. Monitoring student work (enter the share of ECTS credits for each	Attendance	0,5	Written exam	3,5 (without colloquia)	Project	

activity so that the total number of ECTS points corresponds to the credit score of the course)	Experimental work		Research		Practical work	
	Essay		Report		Continuous examination	0,5
	Colloquium	3,5 (without written exam)	Seminar paper		Other	
	Class activity	0,5	Oral exam	1	Other	

3.3. Student workload	Student workload on all bases for 1 ECTS credit is 30 hours in a semester and is estimated as: Attending classes and exercises 60 hours Preparing colloquia or exams through individual work 120 hours

4. GRADING SYSTEM

4.1. Grading seminar papers	

4.2. Grading colloquia/ written and oral exam

Unsatisfactory	Satisfactory	Above average
Responds by memory, without a deeper understanding. Does not know or apply basic terms and concepts. Does not know how to apply or explain the contents of the course with examples.	Reproduces the basic concepts and without difficulty imparts new knowledge, understands the material, explains the terms and concepts supported with examples.	Knowledge is at the level of analysis, synthesis and evaluation. Observes the principles, accurately and thoroughly explains the content of the material, and logically connects and explains the terms and concepts supported with examples. Finds solutions that were not originally given. Notes correlations with related material.

4.3. Final grade according to evaluation elements	During the semester, students have the possibility to partially take written exams through colloquia (twice during the semester). In order to have access to the oral exam, students need to achieve at least 50% on each colloquium. Also, students have a possibility to retake one colloquium. Students who did not pass at least one colloquia (or retaken colloquia) need to take part in the written exam. In this case, in order to have access to the oral exam, students need to achieve at least 50% on written exam. The final grade is formed after the oral exam by aggregating scores achieved In the written exam/colloquia, oral exam and during classes.

4.3. Final grade according to absolute division

Percentage of acquired knowledge, skills and competences (teaching + final exam)	Numerical grade	ECTS grade
90 – 100%	5 (excellent)	A
80 – 89,9%	4 (very good)	B
65 – 79,9%	3 (good)	C
60 – 64,9%	2 (satisfactory)	D
50 – 59,9%	2 (satisfactory)	E

5. ADDITIONAL COURSE INFORMATION

	Title	Number of copies in the library	Availability via other media
5.1. Compulsory literature (available in the library and via other media)	Perišić, A. i Devčić, K. (2016) Matematika s primjenom u ekonomiji. Veleučilište u Šibeniku, Šibenik. Babić, Z., Tomić Plazibat, N. (2003) Poslovna matematika. Ekonomski fakultet Split, Split. (selected chapters) Šorić, K. (2011) Zbirka zadataka iz matematike s primjenom u ekonomiji. Element, Zagreb. (selected chapters)	 2 7 7	 Yes Yes yes
5.2. Additional literature (at the moment of changes and/or amended of study programme)	Lukač, Z (2014) Matematika za ekonomske analize, Udžbenici Sveučilišta u Zagrebu, Element, Zagreb. Babić Z.,Tomić N., Aljinović Z. (2004) Matematika za ekonomiste , Ekonomski fakultet Split.. Harshbarger R.J., Reynolds J.J.(2004) Mathematical Applications for the management, life and social sciences, 7th edition, Boston New York, Houghton Company. Teaching materials		
5.3. Quality assurance methods that ensure the acquisition of knowledge, skills and competences	The control of students' work quality and the acquisition of necessary knowledge and skills will be ensured through interactive work. By keeping track of attendance and student activity during classes and provided information on students` progress through short colloquiums and homework, information for further guidance to students will be provided in order to increase the efficiency of their work. Students will be informed about their rights and obligations as well as the methods of work and the required literature. Indicators of quality assurance system: Student survey, monitoring of annual data from the Croatian employment service on the annual state of student employment, surveys from employers and Alumni association.		
5.4. Informing about the course and contacting the teacher	It is the responsibility of each student to be regularly informed about the course, the coursework, and the classroom activities. All notices of classes or possible adjournment will be published in a timely manner on the e-learning site of the course and on the website of the Polytechnic. Students can contact teachers during the consultation period (at least one hour per week), while for short questions and explanations they can be contacted during class. It is also possible to ask questions by e-mail (from the official e-mail address at @ vus.hr), which will be answered as soon as possible (no later than five working days after receiving the e-mail).		

1. GENERAL INFORMATION			
1.1. Course lecturer	M.Sc. Danijel Mileta	1.8. Course code in ISVU	
1.2. Course title	**E-Business**	1.9. Course code in MOZVAG	
1.3. Assistants and/or associates	-	Forms of teaching (number of hours Lecturing + Practical exercises + Seminars + e learning)	(30 + 0 + 15 + 0)
1.4. Study programme (specialist, undergraduate, graduate)	Undergraduate professional study Business informatics	1.11. Level of e- learning application (1st, 2nd, 3rd level), percentage of on line course performance (max. 20%)	1st, course materials are on-line, 0%
1.5. Course status (mandatory, elective)	Mandatory	1.12. Number of course revisions	1
1.6. Year of study	1st .	1.13. Modernization	Yes
1.7. Credit score (ECTS)	3	1.14. Percentage estimate of course changes and/or supplements	Less than 20% X More than 20 % □

2. COURSE DESCRIPTION		
2.1. Course objectives	The basic goal of the teaching process is to introduce students with opportunities and aspects of electronic business and the benefits it provides. Furthermore, the purpose of the teaching process is to stimulate entrepreneurial competences for students in the domains that provide ICT technology.	
2.2. Terms of course entry and required competences	4 year secondary education completed; qualification level 4.2 according to the CROQF.	
2.3. Learning outcomes on the study programme level	LO1. To analyze the situation, identify opportunities and anticipate problems faced by organizations and individuals in the application of information technologies LO2. Define and evaluate the processes of thinking, planning, decision-making and management in terms of electronically supported business and production LO9. Select appropriate professional literature in Croatian and foreign language, prepare and independently present presentations in Croatian and foreign language to expert and general audiences, and critically evaluate the presented professional topics LO13. Rank security threats and select appropriate countermeasures to protect the information system LO17. Conclude what are the basic principles and methods of quality project management and work successfully in a team	
2.4. Expected learning outcomes on the course level (4-10 learning outcomes)	**Learning outcomes** by Bloom: (maximum 2 werbs for LO)	**Level of LO**: *1 - memory,* *2 - understanding,* *3 - application,* *4 - analysis,* *5 - evaluation,* *6 – synthesis.*
	1. Categorize wireless data systems and analyze their benefits.	4
	2. Plan with a project approach.	6
	3. Break down the Internet, intranet and extranet and the malicious programs and dangers on them	4
	4. Propose e-business models	6

	5. Critically evaluate the quality of ERP and CRM systems	5
	6. To propose and properly present e-business systems	6
	7. Use e-banking	3

2.5. Course content according to detailed curriculum schedule

Constructive allignement

No	Thematic unit	LO of the course	Content/teaching methods	Evaluation	Time
1.	Introduction to the course and detailed curriculum. An introduction to e-Business	4	Students listen to a lecture. On the computer, they are introduced to the course content and documents on the e-learning course page.	In colloquium, written and oral exam they can define, describe and categorize the basic concepts of e-business.	4h
2.	Internet and Intranet	3	Students listen to a lecture and read literature.	At the colloquium, written and oral exam they can define, enumerate and differentiate between the Internet, intranet and extranet and the technologies used in them.	4h
3.	Wireless data transfer	1	Students listen to a lecture and read literature.	At the midterm, written and oral exam, they can define, describe, list and categorize wireless data systems and critically evaluate and evaluate the best technology to use.	4h
4.	Business information system	5	Students listen to a lecture and read literature.	At the colloquium, written and oral exam they can define and describe the information system in business and the concepts related to it.	4h
5.	Customer relationship management	5	Students listen to a lecture and read literature.	In the midterm, written and oral exam they can define and describe the CRM system.	4h
6.	Strategy and models of e-Business	4	Students listen to a lecture and read literature.	They can define, describe and identify e-business models at the midterm exam or the written and oral exam.	4h
7.	Repetition / 1. Colloquium	1, 3, 4, 5		Thematic units 1-6 knowledge	2h
8.	Project management	2	Students listen to a lecture and read literature.	At the midterm, written and oral exam they can define and describe project management and plan with a project approach.	4h
9.	Web portals and sites /e-Marketing	3, 4	Students listen to a lecture and read literature.	In colloquium, written and oral exam they can define and describe the features of portals and web sites and categorize them, and can define and describe the basic elements of e-marketing and categorize and describe its measures.	4h
10.	e-Banking / e-Money	7	Students listen to a lecture and read literature.	In colloquium, written and oral exam they can define, describe and use e-banking, as well as the technologies and systems used in it, and describe and categorize the most common types of e-money.	5h

	11.	Security of e-Business	3, 7	Students listen to a lecture and read literature.	At the midterm, written and oral exam they can define, describe and use security programs and systems and identify, define and describe security threats.	6h
	12.	e-Croatia	4, 6	Students listen to a lecture and read literature.	At the midterm, written and oral exam they can define and describe terms related to e-Croatia and give examples for the same.	2h
	13.	Seminar creations	1-7	Students listen to a lecture and read literature. They use multimedia and networking. At the seminar teaching, they individually explore the content of this topic area by searching the database, and on the basis of it and reading the literature, create a seminar paper that presents the acquired knowledge and presents their own ideas, and ways to solve problems. In the group work on seminar teaching, the brainstorming method and the discussion method on the topic are applied.	In defense of seminar paper, they are able to define and describe basic concepts in the topic of seminar paper, to distinguish and compare similar technologies, to give an example, to critically judge, evaluate and propose the use of the technology or business model in question.	6h
	14.	Seminar presentations	1-7	Students listen to a lecture and read literature. At the seminar teaching, they individually explore the content of this topic area by searching the database, and on the basis of it and reading the literature, create a seminar paper that presents the acquired knowledge and presents their own ideas, and ways to solve problems. In the group work on seminar teaching, the brainstorming method and the discussion method on the topic are applied.	In defense of seminar paper, they are able to define and describe basic concepts in the topic of seminar paper, to distinguish and compare similar technologies, to give an example, to critically judge, evaluate and propose the use of the technology or business model in question.	5h
	15.	Repetition / 2. Colloquium	2, 3, 4, 6, 7		Thematic units 8-15 knowledge	2h

4. EVALUATION OF STUDENT WORK

3.1. Student obligations	In accordance with the Rulebook on Study and the Rulebook on Student Assessment and Evaluation: for all full-time students attendance of at least 70%. Part-time students are required to attend a class of at least 50%. All students must create, present and positively colloquy seminar papers. Students who have achieved during the course: from 0 - 24,9% ECTS credits- are rated F (unsuccessful) and cannot earn ECTS credits, and must re-enroll in the next academic year; from 25 - 49,9% - are assessed by FX (insufficient) and must pass and pass the written exam (test). Written exam (test) can be held in a regular or extraordinary exam period; more than 50% - students have the right to take the final exam. Students can take the final exam from the course in two ways: a) during the course of teaching through continuous monitoring of students (active participation in classes and through two exams); b) passing the exam (written and oral part of the exam).					
3.2. Student work monitoring (enter the share of ECTS credits for each activity so that the total number of ECTS credits corresponds to the course credit value)	Attending classes	1.5	Written exam	1 (without colloquiums)	Project	
	Experimental work		Research		Practical work	
	Esaay		Report		Continuous check	
	Colloquiums	1 (without written part of exam)	Seminar paper	1,5	(other)	1

	Teaching activities		The oral part of exam	1	(other)	
3.3. Student work-load						
4. FORMATION OF STUDENT GRADE						
4.1. Evaluation of seminar paper	**Elements of evaluation**	**Bad**	**Satisfying**		**Above average**	
	Organization	The paper is not organized in a logical order and lacks structure.	The paper is well structured with a clear distinction between the introduction, the main body of the text and the conclusion.		The paper is well structured with a clear distinction between the introduction, the main body of the text and the conclusion, which are logically interconnected.	
	Terminolog, writing style	Words and expressions are not in line with official terminology. The writing style is not appropriate, the sentences are too long, of a modest vocabulary and with frequent and repeated grammatical errors.	Words and expressions are in line with official terminology. The writing style is appropriate, the sentence structure is clear, the vocabulary is appropriate and there are few grammatical errors.		Words and expressions are aligned with official terminology and show an understanding of their meaning. The writing style is excellent, the sentences are clear and concise, the vocabulary is rich and there are no grammatical errors.	
	Citing and referencing references	The sources are not listed at all. The references do not fit the topic and show a cursory approach to exploring the topic.	The sources are listed but incomplete and with errors. The references are relevant to the topic and show a satisfactory research attitude.		The sources are accurately, completely and consistently listed. The references are appropriate, their list is "rich" and comprehensive and shows a detailed research approach.	
4.2. Grading of the colloquium/written and oral exam	**Bad**		**Satisfying**		**Above average**	
	It responds by memory, without a deeper understanding. It does not know or apply basic terms and concepts. It does not know how to apply or explain the contents of the course with examples.		It reproduces the basic concepts and without difficulty imparts new knowledge, understands the material, explains the terms and concepts that it supports with examples.		Knowledge is at the level of analysis, synthesis, and evaluation. It observes the legality, accurately and thoroughly explains the content of the material, and logically connects and explains the terms and concepts that it supports with	

					examples. Finds solutions that were not originally given. It notes correlations with related material.
4.3. Forming the final grade according to the evaluation elements	Active attendance on class	0-69,9% attendance	70-79,9% attendance	80-89,9% attendance	90-100% attendance
		0 points	5 points	7 points	10 points
	Seminar paper	2	3	4	5
		15 points	20 points	25 points	30 points
	Colloquiums/ Written part of exam	2	3	4	5
		50 - 64,9%	65 - 79,9%	80 - 89,9%	90 - 100%
		15 points	20 points	25 points	30 points
	Oral part of exam	2	3	4	5
		15 points	20 points	25 points	30 points

4.4. Formation of the final grade based on the absolute distribution	Percentage of acquired knowledge, skills and competencies (teaching + final exam)	Numerical grade	ECTS grade
	90 – 100%	5 (excellent)	A
	80 – 89,9%	4 (very good)	B
	65 – 79,9%	3 (good)	C
	60 – 64,9%	2 (sufficient)	D
	50 – 59,9%	2 (sufficient)	E

5. ADDITIONAL INFORMATION ABOUT COURSE

5.1. Compulsory literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**
	1. Mileta, D. „Elektroničko poslovanje“, VUŠ (skripta)		on-line
	2. Panian, Ž. : "Elektroničko trgovanje", Sinergija, Zagreb	1	
	3. Panian, Ž. : "Odnosi s klijentima u e-poslovanju", Sinergija, Zagreb	2	
	4. Spremić, M. : "Menadžment i elektroničko poslovanje", Narodne novine, Zagreb	1	

5.2. Additional literature (at the moment of changes and/or amended of study programme)	1. May, P. : "Mobile Commerce", Cambridge University Press, Cambridge 2. Raina, K., Harsh, A. : "mCommerce security: a beginner's guide", McGrawHill/Osborne 3. Chaffey, D. : "E-Business and e-Commerce Management", Financial Times/Prentice Hall		
5.3. Quality assurance methods that ensure the acquisition of knowledge, skills and competences	The control of students' work quality and the acquisition of necessary knowledge and skills will be ensured through interactive work. By keeping track of attendance and student activity during classes and provided information on students` progress through short colloquiums and homework, information for further guidance to students will be provided in order to increase the efficiency of their work. Students will be informed about their rights and obligations as well as the methods of work and the required literature. Indicators of quality assurance system: Student survey, monitoring of annual data from the Croatian employment service on the annual state of student employment, surveys from employers and Alumni association.		
5.4. Informing about the course and contacting the course lecturer	It is the responsibility of each student to be regularly informed about the course, the coursework, and classroom activities. All notices of classes or possible adjournment will be published in a timely manner on the e-learning site of the course and on the website of the Polytechnic. Students can contact teachers during the consultation period (at least one hour per week), while for short questions and explanations they can be contacted during class. It is also possible to ask questions by e-mail (from the official e-mail address name@vus.hr), which will be answered as soon as possible (no later than five working days after receiving the e-mail).		

2. GENERAL INFORMATION			
1.1. Course title	**English for Information Technology II**	1.8. Course code in ISVU	202201
1.2. Course lecturer	Goran Crnica, prof., pred. (lecturer)	1.9. Course code in MOZVAG	
1.3. Assistants and/or associates	-	1.10. Forms of teaching (number of hours Lecturing +Practical exercises + Seminars + e learning)	(30+15+0+0)
1.4. Study programme (specialist, undergraduate, graduate)	**Undergraduate professional study Business Informatics**	1.11. Level of e-learning application (1st, 2nd, 3rd level), percentage of online course performance (max. 20%)	1st, course materials are on-line, %
1.5. Course status (mandatory, elective)	Mandatory	1.12. Number of course revisions	2
1.6. Year of study	1st	1.13. Modernization	■ yes □ no
1.7. Credit score (ECTS)	3	1.14. Percentage estimate of course changes and/or supplements	Less than 20% ■ More than 20 % □

2. COURSE DESCRIPTION	
2.1. Course objectives	The aim of the course is to develop language structures, lexis and grammar from the business English language at the intermediate and higher level. Special attention is given to perfecting the techniques of listening, reading, speaking and writing. Professional vocabulary should be mastered at an intermediate and higher level. The objectives also include the repetition and determination of basic tenses, the adoption of professional vocabulary related to the language of information technologies, as well as international and intercultural economic issues.
2.2. Terms of course entry and required competences	Four-year secondary education completed; possessing a Level 4.2 qualification according to the CROQF. Proficiency in English at minimum B1 level.

2.3. Learning outcomes on the study programme level	LO 1: To apply and link economic terms in more complex written and oral communication in Croatian and foreign language	
	LO 3: To individually and responsibly search relevant literature for reaching solutions and conclusions in Croatian and foreign languages	
	LO 10: Develop team and interpersonal teamwork skills, master communication skills and presentation skills for assigned topics and tasks (case studies, projects, seminars) using advanced software tools for document creation, presentation and budget implementation	
2.4. Expected learning outcomes on the course level (4-10 learning outcomes)	**Learning outcomes according to Bloom's taxonomy:**	**LO level:** 1 - memory, 2 - understanding, 3 - application, 4 - analysis, 5- evaluation, 6 - synthesis
	24. To **define** and **explain** business English keywords	1,2
	25. To **explain** and **apply** correctly grammatical structures and vocabulary in the field of Business English and IT	2,3
	26. To create independently and present content in the field of Business English for IT	3
	27. To **analyse** medium-sized professional texts and **solve** language tasks	4
	28. To **argue critically** the views expressed and express your own views on the topic of Business English	5
	29. To use part of the Common European Framework of Reference for Languages (CEF) level B2 language competences to generate new ideas	6

2.5. Course content according to detailed curriculum schedule

Constructive alignment

r.br.	Thematic topic of the lecture	Thematic topic of the language exercises	LO of the course	Content / teaching method	Evaluation	Hours needed
16.	Outdourcing: „The great job migration“	Offshoring, Collocations Making and responding to suggestions	3,5,6	Students listen to the lectures. They work independently on the computer, inform themselves about the course content and eLearning documents. Students get to know each other in small groups, discuss the reasons for choosing their studies and explain what they expect from the studies. Group representatives present to their colleagues the similarities and differences in the reasons for choosing their studies. Students are introduced to the Polytechnic's Code of Ethics.	In the oral part of the final exam, you introduce yourself or your colleagues. They express their opinion about their own linguistic progress and point out the shortcomings and strengths.	3
17.	Modal verbs	Sentence completition and translation	1,4,5,6	Students listen to the lecture and take an active part by asking questions and answering questions. In the lectures, students are encouraged to engage in dialogue and discussion, as well as to express opinions and points of view. The use of all language skills	At the colloquium or in the written part of the final exam, the pupils define and explain the most important terms of the learning units. They solve language exercises that demonstrate an understanding of the meaning of key terms. In the oral part of the final exam, the students critically discuss their views on the unit topics and texts and use part of the general language skills at	3

					(listening, speaking, reading and writing) is recommended.	level B2 of the Common European Framework of Reference for Languages by presenting their ideas and findings.	
	18.	Conditionals; Type 1	The conditional sentences, practice	2,3,4,6	Students listen to a lecture on grammar and spelling. The students exchange their own experiences on a certain topic and practice language structures by formulating their own examples.	Students apply grammar structures and solve grammar and spelling problems at the colloquium or in the written part of the final exam. In the oral part of the final exam, students use everyday examples to explain how to use certain grammatical structures.	3
	19.	Conditional sentence; Type 2 and Type 3	Speaking, vocabulary practicing	1,4,5,6	Students listen to the lecture and take an active part by asking questions and answering questions. In the lectures, students are encouraged to engage in dialogue and discussion, as well as to express opinions and points of view. The use of all language skills (listening, speaking, reading and writing) is recommended.	At the colloquium or in the written part of the final exam, the pupils define and explain the most important terms of the learning units. They solve language exercises that demonstrate an understanding of the meaning of key terms. In the oral part of the final exam, the students critically discuss their views on the unit topics and texts and use part of the general language skills at level B2 of the Common European Framework of Reference for Languages by presenting their ideas and findings.	3
	20.	Finance; The bottom line, The profit and loss	Adjetives and adverbs	2,3,4,6	Students listen to a lecture on grammar and spelling. The students exchange their own experiences on a certain topic and practice language structures by formulating their own examples.	Students apply grammar structures and solve grammar and spelling problems at the colloquium or in the written part of the final exam. In the oral part of the final exam, students use everyday examples to explain how to use certain grammatical structures.	3
	21.	Passive voice	Passive sentence practicing	1,4,5,6	Students listen to the lecture and take an active part by asking questions and answering questions. In the lectures, students are encouraged to engage in dialogue and discussion, as well as to express opinions and points of view. The use of all language skills (listening, speaking, reading and writing) is recommended.	At the colloquium or in the written part of the final exam, the pupils define and explain the most important terms of the learning units. They solve language exercises that demonstrate an understanding of the meaning of key terms. In the oral part of the final exam, the students critically discuss their views on the unit topics and texts and use part of the general language skills at level B2 of the Common European Framework of Reference for Languages by presenting their ideas and findings.	3
	22.	Recruitment; Hiring for the future A full house	Relative pronouns; Word-building; Small-talk	2,3,4,6	Students listen to a lecture on grammar and spelling. The students exchange their own experiences on a certain topic and practice language structures by formulating their own examples.	Students apply grammar structures and solve grammar and spelling problems at the colloquium or in the written part of the final exam. In the oral part of the final exam, students use everyday examples to explain how to use certain grammatical structures.	3
	23.	Relative pronouns	Career skills, attitudes to personal space	2,3,4,6	Students listen to a lecture on grammar and spelling. The students exchange their own experiences on a certain topic and practice language	Students apply grammar structures and solve grammar and spelling problems at the colloquium or in the written part of the final exam.	3

					structures by formulating their own examples.	In the oral part of the final exam, students use everyday examples to explain how to use certain grammatical structures.	
	24.	Review 1	Review 1 – Self Evaluation	1,2,4,5,6	The students listen to the lecture and prepare individually for the exam. Before the colloquium, students are asked to ask questions about content or grammar.	At the colloquium or in the written part of the final exam, the pupils define and explain the most important terms of the learning units. They solve language exercises that demonstrate an understanding of the meaning of key terms. In the oral part of the final exam, the students critically discuss their views on the unit topics and texts and use part of the general language skills at level B2 of the Common European Framework of Reference for Languages by presenting their ideas and findings.	25
	25.	Counterfeiting Imitating property is theft	Prefixes Career skills; Giving reasons	2,3,4,6	Students listen to a lecture on grammar and spelling. The students exchange their own experiences on a certain topic and practice language structures by formulating their own examples.	Students apply grammar structures and solve grammar and spelling problems at the colloquium or in the written part of the final exam. In the oral part of the final exam, students use everyday examples to explain how to use certain grammatical structures.	3
	26.	Markets „Going, going, gone“	Compound nouns Making and responding to offers	1,4,5,6	Students listen to the lecture and take an active part by asking questions and answering questions. In the lectures, students are encouraged to engage in dialogue and discussion, as well as to express opinions and points of view. The use of all language skills (listening, speaking, reading and writing) is recommended.	At the colloquium or in the written part of the final exam, the pupils define and explain the most important terms of the learning units. They solve language exercises that demonstrate an understanding of the meaning of key terms. In the oral part of the final exam, the students critically discuss their views on the unit topics and texts and use part of the general language skills at level B2 of the Common European Framework of Reference for Languages by presenting their ideas and findings.	3
	27.	Lobbies	Vocabulary and language check	2,3,4,6	Students listen to a lecture on grammar and spelling. The students exchange their own experiences on a certain topic and practice language structures by formulating their own examples.	Students apply grammar structures and solve grammar and spelling problems at the colloquium or in the written part of the final exam. In the oral part of the final exam, students use everyday examples to explain how to use certain grammatical structures.	3
	28.	Reported speech	Reported sentence formation	1,4,5,6	Students listen to the lecture and take an active part by asking questions and answering questions. In the lectures, students are encouraged to engage in dialogue and discussion, as well as to express opinions and points of view. The use of all language skills (listening, speaking, reading and writing) is recommended.	At the colloquium or in the written part of the final exam, the pupils define and explain the most important terms of the learning units. They solve language exercises that demonstrate an understanding of the meaning of key terms. In the oral part of the final exam, the students critically discuss their views on the unit topics and texts and use part of the general language skills at level B2 of the Common European Framework of Reference for Languages by presenting their ideas and findings.	3

	29.	Communication: „Coping with infoglut“	Information overload	2,3,4,6	Students listen to a lecture on grammar and spelling. The students exchange their own experiences on a certain topic and practice language structures by formulating their own examples.	Students apply grammar structures and solve grammar and spelling problems at the colloquium or in the written part of the final exam. In the oral part of the final exam, students use everyday examples to explain how to use certain grammatical structures.	3
	30.	Review 2	Review 2 – Self evaluation	1,2,4,5,6	The students listen to the lecture and prepare individually for the exam. Before the colloquium, students are asked to ask questions about content or grammar.	Students apply grammar structures and solve grammar and spelling problems at the colloquium or in the written part of the final exam. In the oral part of the final exam, students use everyday examples to explain how to use certain grammatical structures.	26

3. EVALUATION OF STUDENTWORK

3.1. Student obligations

Following the Rulebook on Studying and the Rulebook on Student Assessment and Evaluation: for all full-time students, the required attendance is at least 70%. Part-time students are required to attend classes and teach at least 50%; they are also required to write homework. Students are required to bring writing materials (paper and pen/ballpoint pen) to the exercises. The student's acquired knowledge is tested during the course content. Students are evaluated during the teaching process, with particular attention being paid to the student's active participation in teaching and their presentation of homework. Of particular importance for the final grade are the two written tests that the student takes during the semester. If the student passes both exams, he/she is exempted from the written part of the final exam and is obliged to take the oral final exam.

Student achievements:

- Students with 0 - 24.9% of ECTS credits - are graded with an F (unsuccessful) and cannot earn ECTS credits and must re-enrol the course in the next academic year;
- Students with 25 - 49.9% of ECTS credits - are graded FX (insufficient) and must pass the written exam (test). The written exam can be held in a regular or extraordinary exam period;
- Students with more than 50% of ECTS credits - students have the right to take the final exam.

Students can pass the final exam in two ways:

a) by passing two colloquia and an oral exam during the regular or extraordinary exam;

b) by passing the final exam consisting of a written and an oral exam during the regular or extraordinary exam.

3.2. Monitoring student work (enter the share of ECTS credits for each activity so that the total number of ECTS points corresponds to the credit score of the course)

Attendance	0,5	Written exam	1 (without colloquia)	Project	
Experimental work		Research		Practical work	
Essay		Report		Continuous evaluation	
Colloquium	1 (without written exam)	Seminar paper		(Homework for part-time students)	0,5
Active participation	0,5	Oral exam	1	(Other)	

3.3. Student workload

The workload of students on all bases is 1 ECTS credit point (30 semester hours) and is estimated as:

Obligation	***Hours (estimated)***
13. Attending classes and language exercises	45
14. Preparing colloquia or exams through individual work	45

4. GRADING SYSTEM

4.1. Grading seminar papers

-

4.2. Grading colloquia/ written and oral exam

Unsatisfactory	Satisfactory	Above average
Responds by memory, without a deeper understanding. Does not know or apply basic terms and concepts. Does not know how to apply or explain the contents of the course with examples.	Reproduces the basic concepts and without difficulty imparts new knowledge, understands the material, explains the terms and concepts supported with examples.	Knowledge is at the level of analysis, synthesis and evaluation. Observes the principles, accurately and thoroughly explains the content of the material, and logically connects and explains the terms and concepts supported with examples. Finds solutions that were not originally given. Notes correlations with related material.

4.3. Final grade according to evaluation elements

Active participation of lectures and language exercises	70-74,9% of attendance	75-79,9% of attendance	80-89,9% of attendance	90-100% of attendance
	2 points	5 points	10 points	20 points
Colloquia/Written exam	2	3	4	5
	50-64,9%	65-79,9%	80-89,9%	90-100%
	25 points	30 points	35 points	40 points
Oral exam	2	3	5	5
	25 points	30 points	35 points	40 points

4.4. Final grade according to absolute division

Percentage of acquired knowledge, skills and competences (teaching + final exam)	Numerical grade	ECTS grade
90 – 100%	5 (excellent)	A
80 – 89,9%	4 (very good)	B
65 – 79,9%	3 (good)	C
60 – 64,9%	2 (satisfactory)	D
50 – 59,9%	2 (satisfactory)	E

5. ADDITIONAL COURSE INFORMATION

5.1. Compulsory literature (available in the library and via other media)

Title	Number of copies in the library	Availability via other media
4. Trappe, T., & Tullis, G. (2005). *Intelligent Business Coursebook, Intermediate Business English*: Pearson Longman.	10	

5.2. Additional literature (at the moment of changes and/or amended of study programme)	1. Trappe, T., & Tullis, G. (2005). *Intelligent Business Skills Book, Intermediate Business English*: Pearson Longman. 2. Trappe, T., & Tullis, G. (2005). *Intelligent Business Workbookbook, Intermediate Business English*: Pearson Longman.		Availability via e-learning platform
5.3. Quality assurance methods that ensure the acquisition of knowledge, skills and competences	The control of student work quality and the acquisition of necessary knowledge and skills will be ensured through interactive work. By keeping track of attendance and student activity during classes and provided information on student progress through short colloquiums and homework, information for further guidance to students will be provided to increase the efficiency of their work. Students will be informed about their rights and obligations as well as the methods of work and the required literature. Indicators of quality assurance system: Student survey, monitoring of annual data from the Croatian employment service on the annual state of student employment, surveys from employers and Alumni association.		
5.4. Informing about the course and contacting the teacher	It is the responsibility of each student to be regularly informed about the course, the coursework, and classroom activities. All notices of classes or possible adjournment will be published on time on the e-learning site of the course and the website of the Polytechnic. Students can contact teachers during the consultation period (at least one hour per week), while for short questions and explanations they can be contacted during class. It is also possible to ask questions by e-mail (from the official e-mail address at @vus.hr), which will be answered as soon as possible (no later than five working days after receiving the e-mail).		

III. SEMESTER

· GENERAL INFORMATION			
1.1. Course lecturer	Anita Grubišić	1.8. Course code in ISVU	
1.2. Course title	**Principles of accounting**	1.9. Course code in MOZVAG	
1.3. Assistants and/or associates		1.10. Forms of teaching (number of hours Lecturing +Practical exercises + Seminars + e learning)	30 + 30 +00+0
1.4. Study programme (specialist, undergraduate, graduate)	**Professional Undergraduate Study of Business Informatics**	c. 1.11. Level of e- learning application (1st, 2nd, 3rd level), percentage of on line course performance (max. 20%)	1st, course materials are on-line, 0%
1.5. Course status	Mandatory	d. 1.12. Number of course revisions	3
1.6. Year of study	2nd	1.13. Modernization	Yes
1.7. Credit score (ECTS)	5	1.14. Percentage estimate of course changes and/or supplements	Less than 20% X□ More than 20 % □
2. COURSE DESCRIPTION			
2.1. Course objectives	Accounting, content and concept, accounting process and policies, international accounting standards and the environment in which it is developed and operates, accounting plan, asset accounting and amortization, accounting for liabilities and equity, cost accounting, income accounting, accounting of business results, inventory of assets and liabilities, acquisitions and consolidated reports, financial statements, financial indicators, understanding of financial statements, management accounting, inflation accounting, accounting ethics. Exercises include solving characteristic task groups as part of a written exam through examples of business events entries in the order of the RRIF Accounting Plan for Entrepreneurs.		
2.2. Terms of course entry and required competences	No conditions		
2.3. Learning outcomes on the study programme level	LO6. Correctly write and interpret basic concepts in the field of economics and economics of enterprises, entrepreneurs and entrepreneurship and correctly interpret their interdependencies LO7. Select and apply mathematical methods, models and techniques appropriate for solving problems in the field of Business Information Systems LO9. Select appropriate professional literature in Croatian and foreign language, prepare and independently present presentations in Croatian and foreign language to expert and general audiences, and critically evaluate the presented professional topics LO14. Communicate successfully with clients, users and colleagues in a verbal and written manner using appropriate terminology including the ability to communicate about the profession in a foreign language		

2.4. Expected learning outcomes on the course level	**Learning outcomes** accroding to the Bloom`s taxonomy: (up to two verbs per LO)	**Level of LO:** *1- remembering,* *2- understanding,* *3- application,* *4-analysis,* *5-evaluation,* *6-synthesis*
	To explain, link and analyse the features of accounting for entrepreneurs and financial reporting. To analyse the effects of key business transactions on financial statements. To classify business events. To compute and record business events in basic and auxiliary accounting books and records. To understand, link and analyse financial statements.	4,5 4,5 3,4 5,6

2.5. Course content according to detailed curriculum schedule

Number	Thematic unit	LO of the course	Content/teaching method	Evaluation	Duration
1.	Introductory lecture, Accounting concepts and content,	1,2,3	They listen to a lecture and read literature. They work on their own and in team workouts.	in the written and oral exam they define the basic concepts of accounting. Analyze the types and users of accounting information.	12
2.	Types of accounting, Accounting information users, Basic models of balance sheet and income statement,	1,2,3	They listen to a lecture and read literature. They work on their own and in team workouts.	In the written and oral exam they know how to distinguish between accounting categories and set an example, with an understanding of the positions of the underlying financial statements and the application of the law.	12
3.	Accounting harmonization, Accounting documents and controls, Accounting types and accounts.	1,2,3	They listen to a lecture and read literature. They work on their own and in team workouts.	In the written and oral exam they know how to analyze and evaluate the chart of accounts and the chart of accounts, and apply them correctly with the double entry bookkeeping rules.	12
4.	Basic accounting categories, Accounting accounts, Chart of accounts for entrepreneurs, Rules in double-entry bookkeeping system	1,2,3	They listen to a lecture and read literature. They work on their own and in team workouts.	On the written and oral exam they know how to apply the Legal Framework for Financial Accounting and the Croatian Tax System for the preparation of business books and basic financial statements.	12
5.	Legal accounting framework for financial accounting in Croatia, Fundamental financial statements, Accounting records, Tax system in the Republic of Croatia,	1,2,3	They listen to a lecture and read literature. They work on their own and in team workouts.	On the written and oral exam they know how to apply the Legal Framework for Financial Accounting and the Croatian Tax System for the preparation of business books and basic financial statements.	12
6.	Recording of business changes following the chart of accounts, Preparation of annual	1,2,3	They listen to a lecture and read literature. They work on their own and in team workouts.	On the written and oral exam they know how to apply the Legal Framework for Financial Accounting and the	12

		accounts, Repetition for exam, allocation of signatures.			Croatian Tax System for the preparation of business books and basic financial statements.	
	7.	Exercises include solving characteristic task groups as part of a written part of exams through recording business events entries using RRIF Accounting Plan for Entrepreneurs. 1	4	They listen to a lecture and read literature. They work on their own and in team workouts.	They can evaluate and synthesize business changes in both the written and oral exam	12
	8.	Exercises include solving characteristic task groups as part of a written part of exams through recording business events entries using RRIF Accounting Plan for Entrepreneurs. 2	4	They listen to a lecture and read literature. They work on their own and in team workouts.	They can evaluate and synthesize business changes in both the written and oral exam	12
	9.	Exercises include solving characteristic task groups as part of a written part of exams through recording business events entries using RRIF Accounting Plan for Entrepreneurs. 3	4	They listen to a lecture and read literature. They work on their own and in team workouts.	They can evaluate and synthesize business changes in both the written and oral exam	12
	10.	Exercises include solving characteristic task groups as part of a written part of exams through recording business events entries using RRIF Accounting Plan for Entrepreneurs. 4	4	They listen to a lecture and read literature. They work on their own and in team workouts.	They can evaluate and synthesize business changes in both the written and oral exam	12
	11.	Exercises include solving characteristic task groups as part of a written part of exams through recording business events entries using RRIF Accounting Plan for 4Entrepreneurs. 5	4	They listen to a lecture and read literature. They work on their own and in team workouts.	They can evaluate and synthesize business changes in both the written and oral exam	12
	12.	Exercises include solving characteristic task groups as part of a written part of exams through recording business events entries using RRIF Accounting Plan for Entrepreneurs. 6	4	They listen to a lecture and read literature. They work on their own and in team workouts.	They can evaluate and synthesize business changes in both the written and oral exam	12
	13.	Exercises include solving characteristic task groups as part of a written part of exams through recording business events entries using RRIF Accounting Plan for Entrepreneurs. 7	4	They listen to a lecture and read literature. They work on their own and in team workouts.	They can evaluate and synthesize business changes in both the written and oral exam	12

	14.	Exercises include solving characteristic task groups as part of a written part of exams through recording business events entries using RRIF Accounting Plan for Entrepreneurs. 8	4	They listen to a lecture and read literature. They work on their own and in team workouts.	They can evaluate and synthesize business changes in both the written and oral exam	12
	15.	Exercises include solving characteristic task groups as part of a written part of exams through recording business events entries using RRIF Accounting Plan for Entrepreneurs. 9	4	They listen to a lecture and read literature. They work on their own and in team workouts.	They can evaluate and synthesize business changes in both the written and oral exam	12

3. EVALUATION OF STUDENTS` WORK

3.1. Students` obligations	Attendance (in accordance with the Rulebook on Studying) and the preparation of homework assignments are required for signature.					
3.2. Monitoring student work (enter the share of ECTS credits for each activity so that the total number of ECTS points corresponds to the credit score of the course)	Attendance	1	Written exam (theory + practical)	2 +2	Project	
	Experimental work		Research		Practical work	
	Essay		Report		Continuous examination	0,5
	Colloquium		Seminar paper		Other	
	Class activity	0,5	Oral exam		Other	
3.3. Student workload	Student workload on all bases for 1 ECTS credit is 30 hours in a semester and is estimated as: 3. Attending classes and exercises 60 hours 4. Preparing colloquia or exams through individual work 120 hours					

4. GRADING SYSTEM

4.1. Grading seminar papers	-		
4.2. Grading colloquia/ written and oral exam	**Unsatisfactory**	**Satisfactory**	**Above average**
	Responds by memory, without a deeper understanding. Does not know or apply basic terms and concepts. Does not know	Reproduces the basic concepts and without difficulty imparts new knowledge, understands the material, explains the terms and concepts supported with examples.	Knowledge is at the level of analysis, synthesis and evaluation. Observes the principles, accurately and thoroughly explains the content of the material, and logically connects and explains the terms and concepts supported with examples. Finds solutions that

how to apply or explain the contents of the course with examples.		were not originally given. Notes correlations with related material.	

4.3. Final grade according to evaluation elements

Active course attendance	70-75% of attendance	76-86% of attendance	87-100% of attendance	Max. Points
	4 points	7 points	210points	20 points
Seminar paper				
Colloquia/ Written exam	2	3	4	5
	50-64,9%	65-79,9%	80-89,9%	90-100%
	241points	53 points	65 points	72 points
Oral exam	2	3	4	5
	9 points	12 points	15 points	18 points

4.3. Final grade according to absolute division

Percentage of acquired knowledge, skills and competences (teaching + final exam)	Numerical grade	ECTS grade
90 – 100%	5 (excellent)	A
80 – 89,9%	4 (very good)	B
65 – 79,9%	3 (good)	C
60 – 64,9%	2 (satisfactory)	D
50 – 59,9%	2 (satisfactory)	E

5. ADDITIONAL COURSE INFORMATION			
5.1. Compulsory literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**
	1. Grubišić, A.; Osnove računovodstva, Veleučilište u Šibeniku, 2016.		YES
5.2. . Additional literature (at the moment of changes and/or amended of study programme)	1.grupa autora: Računovodstvo poduzetnika s primjerima knjiženja, X naklada, 2014, RRIF Plus, Zagreb	2	
5.3. Quality assurance methods that ensure the acquisition of knowledge, skills and competences	The control of students' work quality and the acquisition of necessary knowledge and skills will be ensured through interactive work. By keeping track of attendance and student activity during classes and provided information on students` progress through short colloquiums and homework, information for further guidance to students will be provided in order to increase the efficiency of their work. Students will be informed about their rights and obligations as well as the methods of work and the required literature. Indicators of quality assurance system: Student survey, monitoring of annual data from the Croatian employment service on the annual state of student employment, surveys from employers and Alumni association.		
5.4. Informing about the course and contacting the teacher	It is the responsibility of each student to be regularly informed about the course, the coursework, and the classroom activities. All notices of classes or possible adjournment will be published in a timely manner on the e-learning site of the course and on the website of the Polytechnic. Students can contact teachers during the consultation period (at least one hour per week), while for short questions and explanations they can be contacted during class. It is also possible to ask questions by e-mail (from the official e-mail address at @ vus.hr), which will be answered as soon as possible (no later than five working days after receiving the e-mail).		

1. GENERAL INFORMATION ABOUT THE SUBJECT			
1.1. Title	**MANAGEMENT**	1.8. ISVU course code	201314
1.2. Lecturer	**Jasmina Sladoljev , univ.spec. oec.**	1.9. MOZVAG course code	
1.3. Assistants and/or associates	None	1.10. Forms of teaching (number of hours Lecturing +Practical exercises + Seminars + e learning)	(30 + 0 + 30)
1.4. Study programme (specialist, undergraduate, graduate)	**Professional Undergraduate Study of Business Informatics**	1.11. Level of e- learning application (1st, 2nd, 3rd level), percentage of on line course performance (max. 20%)	Level 1 - Materials Available Online, 0%
1.5. Course status (mandatory, elective)	Mandatory	1.12. Number of course revisions	2 .
1.6. Study year	2nd	1.13. Modernization	☐yes ■ no
1.7. Credit score (ECTS)	5	1.14. Percentage estimate of course changes and/or supplements	Less than 20% More than 20% ☐
2. COURSE DESCRIPTION			
2.1. Course objectives	The aim of the course is to acquaint students with the specifics of the manager's work, his responsibilities through all management functions, and to direct students to design a project based on all management functions, and it is necessary to make a financial construction		
2.2. Terms of course entry and	Terms of the pis pass the exams with the second year of study		

required competences		
2.3. Learning outcomes on the study programme level	LO6. Correctly write and interpret basic concepts in the field of economics and economics of enterprises, entrepreneurs and entrepreneurship and correctly interpret their interdependencies LO8. Select and apply basic principles of planning and career development in the profession and their own entrepreneurial ventures LO9. Select appropriate professional literature in Croatian and foreign language, prepare and independently present presentations in Croatian and foreign language to expert and general audiences, and critically evaluate the presented professional topics LO14. Communicate successfully with clients, users and colleagues in a verbal and written manner using appropriate terminology including the ability to communicate about the profession in a foreign language LO16. Valorize the important factors that affect the business of the organization and individuals, and apply the basic methods and concepts of planning, management and accounting of business LO17. Conclude what are the basic principles and methods of quality project management and work successfully in a team	
2.4. Expected learning outcomes on the course level	**Learning outcomes** towards Bloom's taxonomy: (up to two verbs per LO)	LO Level: *Recapture,* *Understanding,* *Application,* *Analysis,* *Evaluation,* *Synthesis*
	1. Define, explain and relate key terms related to management and manager	2, 5
	2. Analyze the impact of the environment on the management of business processes and systems, and the appropriate adoption and suggestion of strategies	4, 6
	3. Apply appropriate planning, organizing, human resources management, leadership and motivation techniques, and controls	4
	4. Assess the importance of managing operations and processes	6
	5. Design a business development project, design products, define pricing, sales and cost projections, identify competitors, customers and suppliers, and make a financial construction of operating income and expenses	5.6

2.5. Course content according to detailed curriculum schedule	**Constructive alignment**				
	Thematic unit	**IU course**	**Content / teaching method**	**Valuation**	**It takes time**
	Introductory lecture;	1	They listen to a lecture. In the course of the seminar they are	-	6 hours

			introduced to the course content and documents on the e-learning page of the course by working independently on a computer.		
	Tourism - classification, functions of tourism; Tourism as a system; Basic factors of tourism	1, 2,3 4	They listen to a lecture, present seminar papers	At the midterm or the written and oral exam they define and explain the basic concepts that occur in this whole; then they need to show and analyze the same on a concrete example	6 hours
	T uristic destination and destination system; Tourism trends ;	1, 2,3 4;8,	They listen to lectures, solve case studies, present seminar papers	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they should present and analyze the same on a concrete example, critically judge based on the presented problem and propose a solution to the same problem.	8 hours
	Planning as a function of managing a tourist destination; principles and characteristics of planning; subjective to you in the process of development planning tour with t Icke destination;	1, 2, 3, 4, 8	They listen to lectures, solve case studies, present seminar papers	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they should present and analyze the same on a concrete example, critically judge based on the presented problem and propose a solution to the same problem.	10 hours
	Planning as a function of managing a tourist destination; local planning procedures; planning of tourist sites;	1, 2, 3, 6, 7, 8, 10, 12	They listen to lectures, solve case studies, present seminar papers	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they should present and analyze the same on a concrete example, critically judge based on the presented problem and propose a solution to the same problem.	10 hours
	Analysis of the macro environment and the tourist destination market; SWOT analysis , 1 colloquium	1, 2, 3, 5, 6,7, 10, 12	They listen to lectures , present seminar papers	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they should present and analyze the same on a concrete example, critically judge based on the presented problem and propose a solution to the same problem.	10 hours

	Study trip	11.12	They analyze the elements of the tourist destination and the role of the organizations and make concrete conclusions and suggestions	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they should present and analyze the same on a concrete example, critically judge based on the presented problem and propose a solution to the same problem.	12 hours
	Strategic destination management, Planning models and techniques for minimizing the negative effects of tourism	1, 2, 3, 5 , 7,9, 10, 11, 12,	They listen to a lecture, solve case studies, present projects	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they should present and analyze the same on a concrete example, critically judge based on the presented problem and propose a solution to the same problem.	12 hours
	Strategic marketing planning as part of the overall development planning process	1, 2, 5 , 7,9, 10, 11, 12	They listen to a lecture, solve case studies, present projects	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they should present and analyze the same on a concrete example, critically judge based on the presented problem and propose a solution to the same problem.	12 hours
	Organization of economic agents of tourist intermediation.	1, 2, 3, 5 , 7,9, 10, 11, 12,	They listen to a lecture, solve case studies, present projects	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they should present and analyze the same on a concrete example, critically judge based on the presented problem and propose a solution to the same problem.	16 hours
	Managing the destination mix marketing tools	1, 2, 3, 5 , 7,9, 10, 11, 12,	They listen to a lecture, solve case studies, present projects	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they should present and analyze the same on a concrete example, critically judge based on the presented problem and propose a solution to the same problem.	16 hours
	Destination organization and management structure	1, 2, 3, 5 , 7,9, 10, 11, 12,	They listen to a lecture, solve case studies, present projects	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they	16 hours

				should present and analyze the same on a concrete example, critically judge based on the presented problem and propose a solution to the same problem.	
	Prac learning and monitoring implementation plans	1, 2, 5 , 7,9, 10, 11, 12,	They listen to a lecture, solve case studies, present projects	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they should present and analyze the same on a concrete example, critically judge based on the presented problem and propose a solution to the same problem.	16 hours
	Global Tourism Trends ; Guest lecture; Preparation for the colloquium	1, 2, 5 , 7,9, 10, 11, 12	They listen to a lecture, present projects	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they should present and analyze the same on a concrete example, critically judge based on the presented problem and propose a solution to the same problem.	16 hours
	Concluding Considerations, Signatures, 2nd Colloquium	11.12	present projects	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they should present and analyze the same on a concrete example, critically judge based on the presented problem and propose a solution to the same problem.	4

3. EVALUATION OF STUDENT WORK

3.1. Students` obligations	In accordance with the Book of Rules and the Rulebook on Student Assessment and Evaluation: for all regular students attend at least 70% attendance. Part-time students have the obligation to attend at least 50% of lectures. All students must create, present and positively colloquy seminar paper. Students who have during the course achieved: • From 0 – 24,9% ECTS credits- is rated F (unsuccessful) and cannot get ECTS credits and must re-enrol the subject in the next academic year; • From 25 – 49,9% ECTS credits - is rated FX (inadequate) and has to come out and pass the test (exam). A written exam can be held in a regular or extraordinary exam period; • More than 50% ECTS credits - students have the right to access the final exam of the subject. Students can pass the final exam in two ways: a) during the course through continuous student attendance (active participation in the lessons, solving case studies, making and presenting the seminar paper and project, passing two colloquia); b) during the course (active participation in the lessons, solving case studies, creating and presenting the seminar paper and project) and passing the exam (written and oral exam).					
	Attending classes	0.5	Written exam	2 (no midterm)	Project	2

3.2. Monitoring student work (enter the share of ECTS credits for each activity so that the total number of ECTS points corresponds to the credit score of the course)	Experimental work		Research		Practical work	
	Essay		Report		Continuous checking	
	kolokviji	3 (without written and oral exam)	Seminar paper		(other type)	
	Teaching activities	0.5	Oral exam	1 (no midterm)	(other type)	

3.3. Student workload

Student workload on all bases is 1 ECTS credit 30 semester hours and is estimated as:

Commitment	***Hours (estimated)***
1. Attending classes	60
2. Creation of seminar work and project assignment and presentation	15
3. Preparation for the midterm / exam through self-study	105

4. GRADING

4.1. Seminar paper grading

Valuation Element	Poor	Satisfying	Above average
Organization	The paper is not organized in a logical order and lacks structure.	The paper is well structured with a clear distinction between the introduction, the main body of the text and the conclusion.	The paper is well structured with a clear distinction between the introduction, the main body of the text and the conclusion, which are logically interconnected.
Terminology, writing style	Words and expressions low in line with official terminology. The writing style is not appropriate, the sentences are too long, of a modest vocabulary and with frequent and repeated grammatical errors.	Words and expressions are in line with official terminology. The writing style is appropriate, the sentence structure is clear, the vocabulary is appropriate and there are few grammatical errors.	Words and expressions are aligned with official terminology and show an understanding of their meaning. The writing style is excellent, the sentences are clear and concise, the vocabulary is rich and there are no grammatical errors.

Citing and referencing references	The sources are not listed at all. The references do not fit the topic and show a cursory approach to exploring the topic.	The sources are listed but incomplete with errors. The references are relevant to the topic and show a satisfactory research attitude.	The sources are accurately, completely and consistently listed. The references are appropriate, their list is "rich" and comprehensive and shows a detailed research approach.	

4.2. Colloquium / exam grading

Poor	Satisfying	Above average
Give answer by memory, no deeper understanding. Does not know and does not apply the basic terms and concepts. Cannot apply or explain the contents of the course.	Reproduces basic terms, without difficulty transfers new knowledge, understands subject matter, explains the terms and the notions that substantiate by examples.	Knowledge is at the level of analysis, synthesis and evaluation. It observes legitimacy, accurately and thoroughly explains the content of the subject, and logically links and explains the terms and concepts that it encapsulates. Find solutions that are not originally given. There is a correlation with correlative subjects.

4.3. Creating a final grade according to evaluation elements

Active attendance	70-75% attendance	76-86% attendance	87-100% presence	Project asignment Solved case studies
	2 points	4 points	7 points	3 points
Seminar paper	2	3	4	5
	5 points	7 points	8 points	10 points
Examination / Written examination	2	3	4	5
	50 to 64.9%	65 to 79.9%	80 to 89.9%	90-100%
	25 points	30 points	35 points	40 points
Oral part of the exam	2	3	5	5
	25 points	30 points	35 points	40 points

4.4. Creating a final grade according to absolute allocation

Percentage of acquired knowledge, skills and competences (teaching + final exam)	Number rating	ECTS grade
90 - 100%	5 (excellent)	AND
80 - 89,9%	4 (very good)	B

		65 - 79,9%	3 (good)	C
		60 - 64,9%	2 (sufficient)	D
		50 - 59.9%	2 (sufficient)	E

5. ADDITIONAL INFORMATION ABOUT THE COURSE

5.1. Compulsory literature (available in the library and through other media)	Title	Number of copies in the library	Availability through other media
	1. M. Buble, Menadžment, Ekonomski fakultet u Splitu, Split, 2006.	5	
	2. Nastavni materijali sa e-learninga		da
5.2. Additional literature (at the moment of changes and/or amended of study programme)	1. Sikavica, P., Bahtijarevic-Šiber F.:Menadžment – teorija menadžmenta i veliko empirijsko istraživanje u Hrvatskoj,Masmedia, Zagreb, 2004. 2. Drucker, P.:Najvažnije o menadžmentu, M.E.P.Consult, Zagreb 2005. 3. Weihrich, H., Koontz, H.: Menedžment, Mate, Zagreb, 1993.	3 1 3	
5.3. Quality assurance methods that ensure the acquisition of knowledge, skills and competences	Quality control of students' work and the acquisition of necessary knowledge and skills will be ensured through interactive work. Keeping records of students' attendance and activity in the classroom and information obtained about student progress through the midterm will provide the information needed for further guidance to students in order to increase their work efficiency. Students will be instructed in their rights and obligations as well as working methods and required literature. Quality assurance system indicators: Student survey, monitoring of annual data with CES - on the annual student employment status, employer survey and Alumni Association.		
5.4. information on the course and contact with the teacher	It is the obligation of each student to be regularly informed about the course, the coursework and the classroom activities. All notices of classes or possible adjournment will be published in a timely manner on the e-learning site of the course and on the website of the Polytechnic. Students can contact teachers during the consultation period (at least one hour per week), while for short questions and explanations they can be contacted during class. It is also possible to ask questions by e-mail (from the official e-mail address at @ vus.hr), which will be answered as soon as possible (no later than five working days after receiving the e-mail).		

1. GENERAL INFORMATION ABOUT THE SUBJECT			
1.1. Title	**Object oriented programming**	1.8. ISVU course code	142638
1.2. Lecturer	Marko Pavelic	1.9. MOZVAG course code	
1.3. Assistants and/or associates		1.10. Forms of teaching (number of hours Lecturing +Practical exercises + Seminars + e learning)	(30+45+0+0)
1.4. Study programme (specialist, undergraduate, graduate)	**Undergraduate Professional Study Business Informatics**	1.11. Level of e- learning application (1st, 2nd, 3rd level), percentage of on line course performance (max. 20%)	3rd – materials available On-line, 0%
1.5. Course status	Mandatory	1.12. Number of course revisions	1.
1.6. Study year	2nd	1.13. Modernization	■ yes □ no
1.7. Credit score (ECTS)	6	1.14. Percentage estimate of course changes and/or supplements	Less than 20% ■ More than 20 % □

2. COURSE DESCRIPTION		
2.1. Course objectives	Introduce the student to the concepts of object-oriented programming	
2.2. Terms of course entry and required competences	Four-year high school education completed; having a qualification at level 4.2	
2.3. Learning outcomes on the study programme level	LO7. Select and apply mathematical methods, models and techniques appropriate for solving problems in the field of Business Information Systems LO9 Select appropriate professional literature in Croatian and foreign languages, prepare and independently deliver presentations in Croatian and foreign languages to expert and general audiences, and critically evaluate the presented professional topics LO12. Apply key aspects of information technology (programming, algorithms, data structures, databases and project management in the field of information technology) LO15. Compare and select appropriate development tools at expert level	
2.4. Expected learning outcomes on the course level	**Learning outcomes** towards Bloom's taxonomy: (up to two verbs per LO)	**LO Level:** 19. *Recapture,* 20. *Understanding,* 21. *Application,* 22. *Analysis,* 23. *Evaluation,* 24. *Synthesis*

	1. Write a simple program based on object-oriented principles and UML paradigms					3,4,6
	2. Select the option of developing applications in object-oriented or procedural programming language					3,4,6
	3. Organize application parts into classes, interfaces, and packages in accordance with object-oriented programming principles					3,4,6
	4. Create an object-oriented model of the class hierarchy on which the implementation of the application will be based					4,5, 6
	5. Self-assess whether more complex classes need to be structured into simpler ones for better modularity					4,6
	6. Organize the classes so that they use the other application components over other classes					4,6
	7. Manage tools that generate program code with a basic structure based on the graphical model of the classes					3
2.5. Course content according to detailed curriculum schedule	**Constructive alignment**					
	No:	**Thematic ensemble / Lecture Topic**	**Course LO**	**Content / Teaching Method**	**Evaluation**	**Time needed**
	1.	Introduction to the course and detailed curriculum.	-			2 hours
		Introduction to object-oriented design	2, 3, 4, 5, 6	Listening to lectures, working on a computer, reading literature.	At the midterm or the written and oral exam they define the basic concepts in object oriented programming. They describe the role of the object-oriented approach in programming.	8 hours
	2.	Objects and classes, parts of classes and objects, inheritance with examples	2, 3, 4, 5, 6	Listening to lectures, working on a computer, reading literature.	They can enumerate parts of the class at the colloquium or the written and oral exam. They create an object-oriented model of the class hierarchy on which the implementation of the application will be based	10 hours
	3.	Defining links between objects, polymorphism, encapsulation of objects	2, 3, 4, 5, 6	Listening to lectures, working on a computer, reading literature.	At the midterm or the written and oral exam they know: To model different behaviors of an object according to the interactions that it must have towards the environment. They use a private access modifier on parts of the class. They analyze the effect of different access modifiers. Recognize software development stages and their order They recognize the basic properties of an object and a class.	10 hours
	4.	UML - Introduction, Class Diagrams	2, 3, 4, 5, 6	Listening to lectures, working on a computer, reading literature.	At the midterm or the written and oral exam they can define what UML notation is for and list the major UML notations. At the colloquium or the written and oral exam they can make a class diagram according to the set use case.	10 hours
	5.	UML-Interaction diagrams, Activity diagrams, use of patterns in object-oriented design	2, 3, 4, 5, 6	Listening to lectures, working on a computer, reading literature.	At the midterm or the written and oral exam they can make appropriate interaction and activity diagrams according to the set use case.	10 hours

	6.	Programming in Object Oriented Languages - C # Basics - Syntax and Language Architecture	1,2,3,4,5,6,7	Listening to lectures, working on a computer, reading literature.	Identify the main types of variables (boolean, int, double, String). Declare a variable and assign a corresponding value to it. Use variable naming conventions. Differentiate the representation of integers (byte, short, int, long). Differentiate the representation of decimal numbers (float, double). Perform arithmetic operations on different numerical data types. Declare char and String variables. Perform String variables merge. Perform console printing. Take advantage of automatic promotion of data types. Identify situations where an error may occur. Convert data types. Identify situations where an error may occur. Convert String variable to numeric value	10 hours
	7.	Programming in Object Oriented Languages - C # Basics - Syntax and Language Architecture	1,2,3,4,5,6,7	Listening to lectures, working on a computer, reading literature.	Design a simple class containing variables and a method for printing the contents of variables. Instance an object from a formatted class. Invoke method from instated object. Design a method that contains input parameters. Pass input arguments to method. Design the method so that it can return the result of the computation. Print the result of the method call.	10 hours
	8.	Programming in Object Oriented Languages - C # Basics - Syntax and Language Architecture	1,2,3,4,5,6,7	Listening to lectures, working on a computer, reading literature.	Access the class by specifying the full package name and class. Perform the package import procedure using the import command. Determine which packages do not need to be imported separately. Using the (*) operator when importing packages. Find and view online String class documentation. Invoke the most important methods of the String class. Compare two String objects by content. Retrieve parts of the String object. Explain the need to use random numbers in programming. Invoke Random-class methods that generate random numbers while controlling the range of values obtained. Use different methods from the Random class for different mathematical calculations. Access the values of mathematical constants from the Math class. Comment on method calls relative to the Random class.	15 hours
	9.	Programming in Object Oriented Languages - C # Basics - Syntax and Language Architecture	1,2,3,4,5,6,7	Listening to lectures, working on a computer, reading literature.	Declare and initialize the boolean type of the variable. Perform a comparison of the two expressions using relational operators. Use the if and if / else command. Analyze the problem of comparing String objects using relational operators. Use the compare method to compare two String objects.	15 hours

					Describe logical operators. Associate multiple logical expressions using logical operators. Use ternary operators to execute if / else block. Use else if command. Create nested block if commands. Create switch block logical branching. Compare switch block with if / else command block. Analyze the use of break commands in the switch block of commands.	
	10.	Programming in Object Oriented Languages - C # Basics - Syntax and Language Architecture	1,2,3,4,5,6,7	Listening to lectures, working on a computer, reading literature.	Analyze the elements of standard for loop. Make for loop. Analyze the reach of a variable used within a loop. Use a debugger tool for loop analysis. Analyze cases where an infinite loop occurs. Create a while loop. Create a do-while loop. Analyze cases where the advantage of using a particular type of loop is observed. Use the break loop to exit the loop. Use the continue command to skip a specific block of commands within a loop. Identify the need to make comments within a loop.	15 hours
	11.	Programming in Object Oriented Languages - C # Basics - Syntax and Language Architecture	1,2,3,4,5,6,7	Listening to lectures, working on a computer, reading literature.	Analyze the problem posed and describe it with the classes. Analyze cases of variable reach in different parts of the class. Model class variables and methods by default. Analyze the organization of virtual machine memory when instantiating a new object Access the contents of an object by using an object reference Analyze different ways of instantiating a String object Demonstrate the importance of initializing variables within a class. Analyze problems that arise with null values of variables. Construct a constructor that initializes the initial values of the variables. Use the keyword this as a reference to an object. Model multiple class constructor versions. Create multiple versions of one method. Define what is the signature of a method. Analyze cases where method overload is not possible. Model the various behaviors of an object according to the interactions it must exert toward the environment. Use the private access modifier on parts of the class. Analyze the effect of different access modifiers.	15 hours

					Model "getter" and "setter" methods for the given class. Define the purpose of static variables and show an example of usage. Define the purpose of static methods and show an example of use Demonstrate the purpose of using the final keyword on static variables	
	12.	Programming in Object Oriented Languages - C # Basics - Syntax and Language Architecture	1,2,3,4,5,6,7	Listening to lectures, working on a computer, reading literature.	Create and initialize a one-dimensional field. Access and change individual field values. Cross all the elements of the array using for loops.	15 hours
	13.	Programming in Object Oriented Languages - C # Basics - Syntax and Language Architecture	1,2,3,4,5,6,7	Listening to lectures, working on a computer, reading literature.	Create an ArrayList object and manage its contents. Cross all list items using the for-each loop. Analyze ways to add simple data types to the list, using wrapper classes Explain the purpose of using exceptions in program code. Manage exceptions using try-catch block Identify common exceptions (attempt to access an object that is not instantiated or a non-existent file) Test an example code that contains errors. Describe three sets of bugs. Identify a bug using a print technique. Identify a bug using the debugger tool.	15 hours
	14.	Programming in Object Oriented Languages - C # Basics - Syntax and Language Architecture	1,2,3,4,5,6,7	Listening to lectures, working on a computer, reading literature.	Instance a StringBuilder object. Manage the StringBuilder object. Describe the differences between String and StringBuilder objects. Search for a String object using regular expressions Describe linear recursion. Develop a simple software solution that uses a linear recursion algorithm. Describe nonlinear recursion. Develop a simple software solution that uses nonlinear recursions.	15 hours
	15.	Programming in Object Oriented Languages - C # Basics - Syntax and Language Architecture	1,2,3,4,5,6,7	Listening to lectures, working on a computer, reading literature.	Develop a software solution that manages files using finished classes from the .NET directory. Program access rights on folders and files. Perform serialization and deserialization of the facility. Create your own class package and name it correctly. Distribute the application.	15 hours

3. EVALUATION OF STUDENT WORK	
3.1. Students` obligations	In accordance with the Book of Rules and the Rulebook on Student Assessment and Evaluation: for all regular students attend at least 70% attendance. Part-time students have the obligation to attend at least 50% of lectures. All students must create, present and positively colloquy seminar paper. Students who have during the course achieved:

	• From 0 – 24,9% ECTS credits- is rated F (unsuccessful) and cannot get ECTS credits and must re-enrol the subject in the next academic year; • From 25 – 49,9% ECTS credits - is rated FX (inadequate) and has to come out and pass the test (exam). A written exam can be held in a regular or extraordinary exam period; • More than 50% ECTS credits - students have the right to access the final exam of the subject. Students can take the final exam in the course in two ways: a) during the course of teaching through continuous monitoring of students (active participation in classes and exercises and two exams); b) during class (active participation in classes and exercises) and passing exams (written and oral examinations).

3.2. Monitoring student work (enter the share of ECTS credits for each activity so that the total number of ECTS points corresponds to the credit score of the course)

Attendance	2	Written exam	2 (by submitting both colloquiums the student is relieved of an written examination)	Project	
Experimental work		Research		Practical work	1
Essay		Report		Continuous examination	
Colloquium	3 (by submitting both colloquiums the student is relieved of a written and oral examination)	Seminar paper		Other (inscribe)	
Class activities		Oral exam	1 (by submitting both colloquiums the student is relieved of an oral examination)	Other (inscribe)	

3.3. Student workload

The student's workload on all bases amounts to 1 ECTS point for 30 hours of work per semester and is estimated as:

Commitment	***Hours (estimate)***
15. Attending classes	60
16. Practical work	30
17. Preparation for the Colloquium / exam through self-study	90

4. GRADING

4.1. Seminar paper grading

Valuation Element	**Poor**	**Satisfying**	**Above average**

4.2. Colloquium / exam grading

Poor	**Satisfying**	**Above average**
Give answer by memory, no deeper understanding. Does not know and does not apply the basic terms and concepts. Cannot apply or explain the contents of the course.	Reproduces basic terms, without difficulty transfers new knowledge, understands subject matter, explains the terms and the notions that substantiate by examples.	Knowledge is at the level of analysis, synthesis and evaluation. It observes legitimacy, accurately and thoroughly explains the content of the subject, and logically links and explains the terms and concepts that it encapsulates. Find solutions that are not originally given. There is a correlation with correlative subjects.

Active participation in the lessons	70-75% of attendance	76-86% of attendance	87-100% of attendance	Created mental map. Solved case study.

4.3. Creating a final grade according to evaluation elements		4 points	7 points	10 points	3 points
	Seminar paper	2	3	4	5
		5 points	7 points	8 points	10 points
	Colloquium / written exam	2	3	4	5
		50-64,9%	65-79,9%	80-89,9%	90-100%
		25 points	30 points	35 points	40 points
	Oral exam	2	3	5	5
		25 points	30 points	35 points	40 points

4.4. Creating a final grade according to absolute allocation	Percentage of adopted knowledge, skills and competences (teaching + final exam)	Numerous grade	ECTS grade
	90 – 100%	5 (excellent)	A
	80 – 89,9%	4 (very good)	B
	65 – 79,9%	3 (good)	C
	60 – 64,9%	2 (sufficient)	D
	50 – 59,9%	2 (sufficient)	E

5. ADDITIONAL INFORMATION ABOUT THE COURSE

	Title	**Number of copies in the library**	**Availability via other media**
5.1. Compulsory literature (available in the library and through other media)	F.Urem „Uvod u objektno orijentirano programiranje s primjenama“, Veleučilište u Šibeniku, 2016., ISBN: 978-953-7566-20-3.		Available online at e-learning system
5.2. Additional literature (at the moment of changes and/or amended of study programme)	Booch, Grady, Object-Oriented Analysis and Design with Applications, Addison-Wesley, 1997. P. Eeles, O. Sims, Building Business Objects. John Wiley & Sons, 1998.	3	Available online at e-learning system
5.3. Quality assurance methods that ensure the acquisition of knowledge, skills and competences	The control of students' work quality and the acquisition of necessary knowledge and skills will be ensured through interactive work. By keeping track of attendance and student activity during classes and provided information on students` progress through short colloquiums and homework, information for further guidance to students will be provided in order to increase the efficiency of their work. Students will be informed about their rights and obligations as well as the methods of work and the required literature. Indicators of quality assurance system: Student survey, monitoring of annual data from the Croatian employment service on the annual state of student employment, surveys from employers and Alumni association.		
5.4. information on the course and contact with the teacher	It is obligatory for every student to regularly inform about the course, teaching and teaching activities. All information about teaching or any delay in teaching will be published on the e-learning pages of the course and on the web pages of the Polytechnic. Students can contact the teachers during the consultation term (at least one hour per week), while brief questions and explanations can be addressed during classes. It is possible to ask questions by e-mail (from the official e-mail address from the domain @ vus.hr) that will be answered in a short time (no later than five working days from the receipt of e-mail).		

2. GENERAL COURSE INFORMATION			
1.1. Course title	**Introduction to Operating Systems**	1.8. Course code in ISVU	201316
1.2. Course lecturer	Zvonimir Klarin	1.9. Course code in MOZVAG	
1.3. Assistants and/or associates		1.10. Forms of teaching (number of hours Lecturing +Practical exercises + Seminars + e learning)	(30+30+0+0)
1.4. Study programme (undergraduate, graduate)	**Professional Undergraduate Study of Business Informatics**	1.11. Level of e- learning application (1st, 2nd, 3rd level), percentage of on line course performance (max. 20%)	1st, course materials are on-line, 0%
1.5. Course status	Mandatory	1.12. Number of course revisions	1.
1.6. Year of study	2nd	1.17. Modernization	Yes
1.7. Credit score (ECTS)	4	1.14. Percentage estimate of course changes and/or supplements	Less than 20% X□ More than 20 % □

2. COURSE DESCRIPTION		
2.1. Course objectives	The objective is for students to: - Gain basic knowledge of operating systems - Install the system independently, adjust functions and troubleshoot system errors.	
2.2. Terms of course entry and required competences	4 year secondary education completed; qualification level 4.2 according to the CROQF.	
2.3. . Learning outcomes on the study programme level	LO1: To analyze the situation, identify opportunities and anticipate the problems encountered by organizations and individuals in the application of information technologies LO11: To relate the activities of building and maintaining the information system with the needs of the client and the user LO12: Apply key aspects of information technology (programming, algorithms, data structures, databases and project management in the field of IT) LO13: Rank security threats and select appropriate countermeasures to protect the information system	
2.4. Expected learning outcomes on the course level	**Learning outcomes** accroding to the Bloom`s taxonomy: (up to two verbs per LO)	**Level of LO:** *1- remembering,* *2- understanding,* *3- application,* *4-analysis,* *5-evaluation,* *6-synthesis*
	1. Define and interpret the basic concepts of operating systems	1,3
	2. Apply and connect the basics of operating systems	3,4
	3. Evaluate the use of older OS	5

	4. Identify and customize computers on older OS	4,3
	5. Independently install the current Windows OS	6
	6. Assess and solve functional OS installation problems	4,5

2.5. Course content according to detailed curriculum schedule

Constructive allignement

no	Thematic unit	LO of the course	Content/teaching methods	Evaluation	Time
1	Introduction to the course and a detailed syllabus.	1	They are listening to a lecture. During the exercises, they get acquainted with the content of the course and the documents on the e-learning page of the course.	-	4 h
2.	OS development and structure	1	Listen to lectures. During the exercises, they get acquainted with the thematic unit through independent work	In written and oral exam they know how to describe OS parts	4 hi
3.	Management of memory, input / output, file systems, processor.	1,2	Listen to lectures. During the exercises, they get acquainted with the thematic unit through independent work	In written and oral exam they know the basic OS processes	4 h
4.	Distributed systems.	2	Listen to lectures. During the exercises, they get acquainted with the thematic unit through independent work	In written and oral exam they know the system purpose	4 h
5.	Main features and comparisons of the most common operating systems	2	Listen to lectures. During the exercises, they get acquainted with the thematic unit through independent work	In written and oral exam they know the most common OS	8 h
6.	DOS I	3,4	Listen to lectures. During the exercises, they get acquainted with the thematic unit through independent work	In written and oral exam they know how to apply DOS with basic orders	4 h
7.	DOS II	3,4	Listen to lectures. During the exercises, they get acquainted with the thematic unit through independent work	In written and oral exam they apply DOS with basic orders	4 h
8.	Windows through history I	5,6	Listen to lectures. During the exercises, they get acquainted with the thematic unit through independent work	In written and oral exam they know the Windows xp configuration	4 h
9.	Windows through history II	5,6	Listen to lectures. During the exercises, they get acquainted with the thematic unit through independent work	In written and oral exam they know Windows 7 configuration	4 h
10.	Windows current OS I	5,6	Listen to lectures. During the exercises, they get acquainted with the thematic unit through independent work	In written and oral exam they know how to configure Windows OS	4 h
11.	Windows current OS II	5,6	Listen to lectures. During the exercises, they get acquainted with the thematic unit through independent work	In written and oral exam they know how to configure Windows OS	8 h
12.	Windows current OS III	5,6	Listen to lectures. During the exercises, they get acquainted with the thematic unit through independent work	In written and oral exam they know to configure Windows OS	4 h

	13.	Backup OS	6	Listen to lectures. During the exercises, they get acquainted with the thematic unit through independent work	In written and oral exam they know vto make a copy of OS, data and applications	4 h
	14.	OS on virtual machines	3,4,5,6	Listen to lectures. During the exercises, they get acquainted with the thematic unit through independent work	In written and oral exam they know to set OS of a virtual machine	4 h
	15.	Concluding remarks / Repetition and preparation for the exam		Listen to lectures. During the exercises, they get acquainted with the thematic unit through independent work		64 h

3. EVALUATION OF STUDENTS` WORK

3.1. Students` obligations

In accordance with the Regulations on Studying and the Regulations on Student Assessment and Evaluation: for all full-time students attendance of at least 70%. Part-time students are required to attend classes at least 50%. Students who have during the course achieved:

- from 0 - 24,9% ECTS credits- are rated F (unsuccessful) and cannot obtain ECTS credits, and must re-enroll in the next academic year;
- from 25 - 49,9% - are assessed by FX (insufficient) and must pass the written exam (test). Written exam (test) can be held in a regular or extraordinary exam period;
- more than 50% - students have the right to take the final exam.

Students can take the final exam from the course in two ways: a) during the course of teaching through continuous monitoring of students (active participation in classes); b) by passing the exam (written and oral part of the exam).

3.2. Monitoring student work (enter the share of ECTS credits for each activity so that the total number of ECTS points corresponds to the credit score of the course))

Attendance	0,5	Written exam	2	Project		
Experimental work		Research		Practical work		
Essay		Report		Continuous examination	1	
Colloquium		Seminar paper		Other		
Class activity	0,5	Oral exam	1	Other		

3.3. . Student workload

Student workload on all bases for 1 ECTS credit is 30 hours in a semester and is estimated as:

1. Attending classes and exercises 60 hours
2. Preparing colloquia or exams through individual work 60 hours

4. FORMIRANJE OCJENE

4.1. Grading seminar papers

-

4.2. Grading colloquia/ written and oral exam

Unsatisfactory	Satisfactory	Above average
Responds by memory, without a deeper understanding. Does not know or apply basic terms and concepts. Does not know how to apply or explain the contents of the course with examples.	Reproduces the basic concepts and without difficulty imparts new knowledge, understands the material, explains the terms and concepts supported with examples.	Knowledge is at the level of analysis, synthesis and evaluation. Observes the principles, accurately and thoroughly explains the content of the material, and logically connects and explains the terms and concepts supported with examples. Finds solutions that were not originally given. Notes correlations with related material.

4.3. Final grade according to evaluation elements

Active course attendance	70-74,9% of attendance	75-79,9% of attendance	80-89,9% of attendance	90-100% of attendance
	2 points	5 points	10 points	20 points
Colloquia/ Written exam	2	3	4	5

		50-64,9%	65-79,9%	80-89,9%	90-100%
		25 points	30 points	35 points	40 points
	Oral exam	2	3	5	5
		25 points	30 points	35 points	40 points

4.4. Final grade according to absolute division	Percentage of acquired knowledge, skills and competences (teaching + final exam)	Numerical grade	ECTS grade
	90 – 100%	5 (excellent)	A
	80 – 89,9%	4 (very good)	B
	65 – 79,9%	3 (good)	C
	60 – 64,9%	2 (satisfactory)	D
	50 – 59,9%	2 (satisfactory)	E

5. ADDITIONAL COURSE INFORMATION

	Title	Number of copies in the library	Availability via other media
5.1. Compulsory literature (available in the library and via other media)	2. Jim Cooper: Using DOS 6.22 3. Microsoft: Wndows 10		Avaialble on the e-learning page of the course
5.2. Additional literature (at the moment of changes and/or amended of study programme)	5. Microsoft: Windows XP 6. Microsoft: Windows 7		Avaialble on the e-learning page of the course
5.3. Quality assurance methods that ensure the acquisition of knowledge, skills and competences	The control of students' work quality and the acquisition of necessary knowledge and skills will be ensured through interactive work. By keeping track of attendance and student activity during classes and provided information on students` progress through short colloquiums and homework, information for further guidance to students will be provided in order to increase the efficiency of their work. Students will be informed about their rights and obligations as well as the methods of work and the required literature. Indicators of quality assurance system: Student survey, monitoring of annual data from the Croatian employment service on the annual state of student employment, surveys from employers and Alumni association.		
5.4. Informing about the course and contacting the teacher	It is the responsibility of each student to be regularly informed about the course, the coursework, and the classroom activities. All notices of classes or possible adjournment will be published in a timely manner on the e-learning site of the course and on the website of the Polytechnic. Students can contact teachers during the consultation period (at least one hour per week), while for short questions and explanations they can be contacted during class. It is also possible to ask questions by e-mail (from the official e-mail address at @ vus.hr), which will be answered as soon as possible (no later than five working days after receiving the e-mail).		

1. GENERAL INFORMATION			
1.1. Course lecturer	Ivan Livaja	1.8. Course code in ISVU	140755
1.2. Course title	**Introduction to databases**	1.9. Course code in MOZVAG	
1.3. Assistants and/or associates		1.10. Forms of teaching (number of hours Lecturing +Practical exercises + Seminars + e learning)	(30+30+0+0)
1.4. Study programme (specialist, undergraduate, graduate)	Undergraduate Professional Study of Business informatics	1.11. Level of e- learning application (1st, 2nd, 3rd level), percentage of on line course performance (max. 20%)	1st, course materials are on-line, 0%
1.5. Course status	Mandatory	1.12. Number of course revisions	1
1.6. Year of study	2st	1.18.Modernization	Yes
1.7. Credit score (ECTS)	4	1.14. Percentage estimate of course changes and/or supplements	Less than 20% X□ More than 20 % □
2. COURSE DESCRIPTION			
2.1. Course objectives	• Understanding database development in business process shaping • Adopting and expanding knowledge in the field: • Adopting knowledge, techniques for working with databases - Relational Database Design - Database Managment - Create an Entity Relationship Diagram - Adopt the basics of sql language - Adopting knowledge, techniques for working with databases • - The aim of the course is to train students to understand database development in business process design so that they can independently participate in creating applications		
2.2. Terms of course entry and required competences	4 year secondary education completed; qualification level 4.2 according to the CROQF.		

2.3. Learning outcomes on the study programme level	LO1: To analyze the situation, identify opportunities and anticipate problems faced by organizations and individuals in the application of information technologies LO3: Evaluate database design according to business requirements LO9: Select appropriate professional literature in Croatian and foreign language, prepare and independently present presentations in Croatian and foreign language to expert and general audiences, and critically evaluate the presented professional topics LO12: Apply key aspects of information technology (programming, algorithms, data structures, databases and project management in the field of IT) LO15: Compare and select appropriate development tools at expert level

2.4. Expected learning outcomes on the course level

Learning outcomes accroding to the Bloom`s taxonomy: (up to two verbs per LO)	**Level of LO:** *1- remembering, 2- understanding, 3- application, 4-analysis, 5-evaluation, 6-synthesis*
30. Classify and explain common features, similarities and differences between current and relevant information and communication technologies, and database structures and organizations	2, 4
31. Implement database implementation procedures	3
32. Describe and make a diagram of the relational scheme of simpler databases	1, 4
33. Propose and argue proposals for the application of databases	5, 6
34. Present the acquired knowledge, ideas, problems and solutions independently and in a team.	6
35. Use materials and tools to search scientific and professional literature in native and English languages	3

2.5. Course content according to detailed curriculum schedule

Constructive allignement

no	Thematic unit	LO of the course	Content/teaching methods	Evaluation	Time
31.	Introduction (history, DBMS solution overview)	-	Listen to lectures. Work independently on computer, get to know course content and elearning documents.	-	9 h
32.	Introduction to SQL Language	2, 3	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the midterm or the written / oral exam define the basic concepts of databases.	6 h
33.	Introduction to SQL Language	15	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the midterm or the written / oral exam define the basic concepts of databases.	6 h
34.	Relational model and data normalization	16, 19	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the midterm or the written / oral exam define the basic concepts of databases. They are analyze databases.	9 h
35.	Relational model and data normalization	3, 15, 16, 19	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the midterm or the written / oral exam define the basic concepts of databases. Analyze and apply data normalization and relational model.	9h

	36.	Data Modeling Using Entity Relationship Model	3, 15, 16, 19	Write the colloquium.	-	8 h	
	37.	Data Modeling Using Entity Relationship Model	3, 15, 16, 19	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the midterm or the written / oral exam define the basic concepts of databases. They model the data by using E-R models.	9 h	
	38.	SQL commands for creating and editing a database	3, 15, 16, 19	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the midterm or the written / oral exam define the basic concepts of databases. They model the data by using E-R models.	9 h	
	39.	SQL Data Objects	3, 15, 16, 19	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the midterm or the written / oral exam define the basic concepts of databases. They create a database and make changes to the data within it.	7 h	
	40.	Relational database management system	3, 15, 16, 19	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the midterm or the written / oral exam, they can define and use development environments for working with databases.	7 h	
	41.	CASE tools and development environments for working in databases - Visual Studio	3, 15, 16, 19	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the midterm or the written / oral exam, they can define and use development environments for working with databases.	7 h	
	42.	CASE tools and development environments for working in databases - Visual Studio	3, 15, 16, 19	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the midterm or the written / oral exam, they can define and use development environments for working with databases.	8 h	
	43.	CASE tools and development environments for working in databases - Visual Studio	3, 15, 16, 19	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the midterm or the written / oral exam, they can define and use development environments for working with databases.	8 h	
	44.	Introduction to XML	3, 15, 16, 19	Write the colloquium.	-	9 h	
	45.	Defense and presentation of the seminar, recurrence of colloquia		Listen to lectures and read literature.	-	9 h	

3. EVALUATION OF STUDENTS` WORK						
3.1. Students` obligations	In accordance with the Regulations on Studying and the Regulations on Student Assessment and Evaluation: for all full-time students attendance of at least 70%. Part-time students are required to attend classes at least50%.All students are required to carry calculator and formulae list. Students who have during the course achieved: • from 0 - 24,9% ECTS credits- are rated F (unsuccessful) and cannot obtain ECTS credits, and must re-enroll in the next academic year; • from 25 - 49,9% - are assessed by FX (insufficient) and must pass the written exam (test). Written exam (test) can be held in a regular or extraordinary exam period; • more than 50% - students have the right to take the final exam. Students can take the final exam from the course in two ways: a) during the course of teaching through continuous monitoring of students (active participation in classes and through two colloquia); b) by passing the exam (written and oral part of the exam).					
3.2. Monitoring student work (enter the share of ECTS credits for each	Attendance	1,0	Written exam	2,0 (without colloquia)	Project	

activity so that the total number of ECTS points corresponds to the credit score of the course)	Experimental work		Research		Practical work	
	Essay		Report		Continuous examination	0,5
	Colloquium	2,0 (without written exam)	Seminar paper		Other	
	Class activity		Oral exam	0,5	Other	
3.3. Student workload	Student workload on all bases for 1 ECTS credit is 30 hours in a semester and is estimated as: 5. Attending classes and exercises 45 hours 6. Preparing colloquia or exams through individual work 75 hours					

4. GRADING SYSTEM

4.1. Grading seminar papers

4.2. Grading colloquia/ written and oral exam

Unsatisfactory	**Satisfactory**	**Above average**
Responds by memory, without a deeper understanding. Does not know or apply basic terms and concepts. Does not know how to apply or explain the contents of the course with examples.	Reproduces the basic concepts and without difficulty imparts new knowledge, understands the material, explains the terms and concepts supported with examples.	Knowledge is at the level of analysis, synthesis and evaluation. Observes the principles, accurately and thoroughly explains the content of the material, and logically connects and explains the terms and concepts supported with examples. Finds solutions that were not originally given. Notes correlations with related material.

4.3. Final grade according to evaluation elements

Active course attendance	70-74,9% of attendance	75-79,9% of attendance	80-89,9% of attendance	90-100% of attendance
	2 points	5 points	10 points	20 points
Colloquia/ Written exam	2	3	4	5
	50-64,9%	65-79,9%	80-89,9%	90-100%
	25 points	30 points	35 points	40 points
Oral exam	2	3	5	5
	25 points	30 points	35 points	40 points

4.3. Final grade according to absolute division

Percentage of acquired knowledge, skills and competences (teaching + final exam)	Numerical grade	ECTS grade
90 – 100%	5 (excellent)	A
80 – 89,9%	4 (very good)	B

		65 – 79,9%	3 (good)	C
		60 – 64,9%	2 (satisfactory)	D
		50 – 59,9%	2 (satisfactory)	E

5. ADDITIONAL COURSE INFORMATION

	Title	Number of copies in the library	Availability via other media
5.1. Compulsory literature (available in the library and via other media)	An Introduction to Database Systems, 8th Edition; C.J. Date; Addison Wesley	7	
		5	
5.2. Additional literature (at the moment of changes and/or amended of study programme)	Teaching material and exercises A First Course in Database Systems; J. D. Ullman, J. Widom; Prentice-Hall; 2007; ISBN: 9780136006374 Database Systems: A Practical Approach to Design, Implementation, and Management; T. M. Connolly, C. E. Begg; Addison Wesley; 2004		
5.3. Quality assurance methods that ensure the acquisition of knowledge, skills and competences	The control of students' work quality and the acquisition of necessary knowledge and skills will be ensured through interactive work. By keeping track of attendance and student activity during classes and provided information on students` progress through short colloquiums and homework, information for further guidance to students will be provided in order to increase the efficiency of their work. Students will be informed about their rights and obligations as well as the methods of work and the required literature. Indicators of quality assurance system: Student survey, monitoring of annual data from the Croatian employment service on the annual state of student employment, surveys from employers and Alumni association.		
5.4. Informing about the course and contacting the teacher	It is the responsibility of each student to be regularly informed about the course, the coursework, and the classroom activities. All notices of classes or possible adjournment will be published in a timely manner on the e-learning site of the course and on the website of the Polytechnic. Students can contact teachers during the consultation period (at least one hour per week), while for short questions and explanations they can be contacted during class. It is also possible to ask questions by e-mail (from the official e-mail address at @ vus.hr), which will be answered as soon as possible (no later than five working days after receiving the e-mail).		

1. GENERAL INFORMATION			
1.1. Course lecturer	Dragan Zlatović	1.8. Course code in ISVU	201319
1.2. Course title	**Commercial and Copyright Law**	1.9. Course code in MOZVAG	
1.3. Assistants and/or associates		1.10. Forms of teaching (number of hours Lecturing +Practical exercises + Seminars + e learning)	(30+15+0+0)
1.4. Study programme (specialist, undergraduate, graduate)	Undergraduate Professional Study Business Informatics	1.11. Level of e- learning application (1st, 2nd, 3rd level), percentage of on line course performance (max. 20%)	1st, course materials are on-line, 0%
1.5. Course status (obligatory, optional)	Obligatory	1.12. Number of course revisions	1
1.6. Year of study	2nd	1.13.Modernization	Yes
1.7. Credit score (ECTS)	3	1.14. Percentage estimate of course changes and/or supplements	Less than 20% X□ More than 20 % □
2. COURSE DESCRIPTION			
2.1. Course objectives	General and specific knowledge of the system of commercial law in the Republic of Croatia, including important elements such as contracting, its interpretation, modification of contractual provisions and termination of contractual relationship. General and specific knowledge that enables the understanding and identification of companies, analysis and synthesis of information on companies, the developed ability to apply the acquired knowledge to solving various practical problems related to companies. Present and explain basic criteria for distinguishing copyright and related rights, define basic copyright institutes, describe and explain the course of copyright protection.		
2.2. Terms of course entry and required competences	4 year secondary education completed; qualification level 4.2 according to the CROQF.		
2.3. Learning outcomes on the study programme level	LO1: to analyze the situation, identify opportunities and anticipate the problems encountered by organizations and individuals in the application of information technologies; LO9: to apply relevant professional literature in Croatian and foreign language, prepare and independently present presentations in Croatian and foreign language for professional and general public, and critically evaluate presented professional topics; LO10: to support and apply ethical principles and principles of environmental protection, as well as legal regulations and standards applicable in information technologies; LO16: o valorize elevant factors that affect organization`s and individual`s business and apply basic methods and concepts of planning, management and accounting; LO17: to conclude what the basic principles and methods of good project management are and work successfully in a team		

2.4. Expected learning outcomes on the course level

Learning outcomes accroding to the Bloom`s taxonomy: (up to two verbs per LO)		**Level of LO:** *1- remembering, 2- understanding, 3- application, 4-analysis, 5-evaluation, 6-synthesis*
1.	distinguish and argue the general concepts of company law, the common characteristics of companies and the liability of the company and its members for the obligations of the company;	4,5
2.	identify and analyze the most common occurrence forms of companies in Croatia according to their internal organization, management and responsibility for the obligations of the company	4,5
3.	create and develop a plan for the founding of companies of individuals, joint stock companies and limited liability companies	3,6
4.	to choose optimal contractual solutions of commercial law;	5
5.	analyze and select the legal sources and legal rules governing intellectual property rights, ie copyright and related rights,	4,5
6.	distinguish and argue forms of intellectual property rights or copyright works by type and content of copyright,	4,5
7.	to draft and argue individual contracts for the use of intellectual property rights, ie copyright and related rights, in particular those applicable to the information society	6

2.5. Course content according to detailed curriculum schedule

Constructive allignement

no	**Thematic unit**	**LO of the course**	**Content/teaching methods**	**Evaluation**	**Time**
46.	Introduction into the course and detailed plan.	-	Listen to lectures. Work independently on computer, get to know course content and elearning documents.	-	4
47.	COMMERCIAL LAW, COMPANY LAW AND LABOR LAW IN TOURISM - Commercial Law, Company Law, Labor Law, Legal Sources, Corporate Governance, Tourism Law Development	1,3,5	They listen to a lecture, browse databases and read literature	The colloquium or written / oral exam define basic concepts of law firms and management companies, as well as the basics and principles of labor law. They analyze the principles in this area of law. Establish and interpret the legal framework for the organization of companies.	4
48.	GENERAL CHARACTERISTICS OF COMPANY - trader, trade association, the difference compared to other forms of enterprises (crafts, etc.), Preddruštvo, branches, business activity, company, address, entry into the register, conditions for the start of operations;	1-7	They listen to a lecture, browse databases and read literature. They listen to a lecture and read literature. At the exercises, independently and in a team, they analyze case studies and draw conclusions on the application of legal regulations to a specific factual situation, and draw up acts related to the registration of companies in the court register, or registration of trades. In group work on exercises, the brainstorming method is used and the method of discussing particular forms	They can enumerate, differentiate and give an example of the basic common characteristics of companies in the colloquium or the written / oral exam, especially in relation to the protection of the company and representation of the companies, and the distinction in relation to the craft. Practical work created and presented (using computer programs independently).	4

			of company representation and trade name protection modalities.			
49.	CRAFTS - content, method and conditions for performing crafts, types of crafts, rights and obligations of craftsmen, education and training for performing related crafts, institute of domestic craft and secondary profession, legal entity that performs crafts, organization of crafts FAMILY FARMING (OPG) - conditions for performing the agricultural economic activity and related supplementary activities carried out on the family agricultural holding as an organizational form, manner and conditions for entry in the register	1-7	They listen to a lecture and read literature. At the exercises, they independently and in a team analyze practical examples and draw conclusions on the application of legal regulations to a specific factual situation, and draw up acts relating to the establishment and registration of crafts and family farms.	At the colloquium or written / oral exam, they can define crafts and family farms, indicate their common and different characteristics in relation to companies, or analyze and explain the modalities of managing these entrepreneurial forms. Practical work drafted and presented (using computer programs and sources of case law and other legal practice independently).	4	
50.	PERSONAL SOCIETIES - the concept of company of persons, partnership, public company PERSONAL SOCIETIES - limited partnership, secret society, economic interest association	1-6	They listen to a lecture and read literature. At the exercises, independently and in a team, they analyze case studies and draw conclusions on the application of legal regulations to a specific factual situation, and draw up acts relating to the establishment of certain types of companies of persons	At the colloquium or the written / oral exam, they can define the societies of persons, indicate their common and distinctive characteristics, or analyze and explain the modalities of managing these societies. Practical work drafted and presented (using computer programs and sources of case law and other legal practice independently).	4	
51.	LIMITED LIABILITY COMPANY - term, incorporation, legal relations between members, bodies, simple limited liability company;	1-7	They listen to a lecture and read literature. They exercise case studies independently and in a team and draw conclusions on the application of legal regulations to a specific factual situation, and draw up acts relating to the establishment of joint stock companies.	At the colloquium or the written / oral exam they can define the companies of the capital, state their common and different characteristics, that is, analyze and explain the modalities of management of the limited liability companies. Practical work drafted and presented (using computer programs and sources of case law and other legal practice independently).	6	
52.	JOINT STOCK COMPANY - term, share capital, shares, incorporation;	1-7	They listen to a lecture and read literature. They exercise case studies independently and in a team and draw conclusions on the application of legal regulations to a specific factual situation, and draw up acts relating to the establishment of joint stock companies.	At the colloquium or the written / oral examination, they can define the companies of the capital, state their common and different characteristics, that is, analyze and explain the modalities of founding joint stock companies and explain the term shareholding. Practical work drafted and presented (using computer programs and sources of case law and other legal practice independently).	6	
53.	JOINT STOCK COMPANY - monistic and dualistic structure of corporate governance, termination of joint stock companies;	1-7	They listen to a lecture and read literature. They exercise case studies independently and in a team and draw conclusions on the application of legal regulations to a specific factual situation, and draft acts related to corporate governance modalities.	At the colloquium or the written / oral exam they can define the companies of the capital, state their common and different characteristics, that is, analyze and explain the modalities of management and termination of the joint stock companies. Practical work drafted and presented (using	6	

				computer programs and sources of case law and other legal practice independently).		
54.	EUROPEAN COMPANY LAW - Legal Wells, European Society (SE), European Economic Interest Association, European Cooperative Society; STATUS CHANGE AND TERMINATION OF TRADING COMPANIES - Status changes, transformation, bankruptcy, ways of termination of companies;	1-7	They listen to a lecture and read literature. They use multimedia and networking. The types and peculiarities of European society (SE) and EGIU, the status changes of companies are presented and acts related to the implementation of status changes are elaborated. Modalities for termination of companies are analyzed, including bankruptcy proceedings and the impact of bankruptcy on corporate governance. In the group work on seminar teaching, the brainstorming method and the discussion method on the topic are applied.	At the colloquium or the written / oral exam, they can define and interpret the specificities of European societies and the status changes and transformation of societies. Suggest a specific status change depending on specific business and other indicators. Practical work drafted and presented (using computer programs and sources of case law and other legal practice independently).	6	
55.	COMMERCIAL CONTRACT LAW - term, legal sources, general part of compulsory law, principles of compulsory law, contracting, types of commercial contracts	4	They listen to a lecture and read literature. They use multimedia and networking. In group work on exercises, the brainstorming method and the discussion method on the topic are applied.	At the colloquium or the written / oral exam they can determine and interpret the specifics of general and special contract law. Practical work (using computer programs and sources of case law and other legal practice) developed and presented on the example of a commercial contract.	6	
56.	INTELLECTUAL PROPERTY LAW - legal sources, development, forms - patent, trademark, industrial design, topography of semiconductor products, protection	5,6	They listen to a lecture and read literature. They use multimedia and networking. In group work on exercises, the brainstorming method and the discussion method on the topic are applied.	At the colloquium or the written / oral exam they can define the legal framework and forms of intellectual property rights, the procedure for their acquisition and protection. Practical work drafted and presented (using computer programs and sources of case law and other legal practice independently).	6	
57.	COPYRIGHT LAW - concept of copyright, historical development, place in the legal system, legal nature, sources of copyright. Impact of EU law on Croatian copyright The Impact of Globalization on the Copyright Order. Copyright in a digital environment	5,6	They listen to a lecture and read literature. They use multimedia and networking. In group work on exercises, the brainstorming method and the discussion method on the topic are applied.	In the colloquium or the written / oral exam, they can define the legal framework and sources and the nature of copyright and related rights in the digital environment. Practical work drafted and presented (using computer programs and sources of case law and other legal practice independently).	6	
58.	COPYRIGHT - copyright object, author and other copyright holders, copyright content RELATED RIGHTS - Artist Artist Law, Phonogram Producer Right, Film Producer Right (Videogram Producer) Right, Broadcasting Organization Right, Database Producer Right, Publisher Right.	5,6	They listen to a lecture and read literature. They use multimedia and networking. In group work on exercises, the brainstorming method and the discussion method on the topic are applied.	At the colloquium or the written / oral exam they can define the types of copyright works, the copyright holders, the content of copyright, and the basic determinants of related rights. Practical work drafted and presented (using computer programs and sources of case law and other legal practice independently).	6	

	59.	EXERCISE AND PROTECTION OF COPYRIGHT AND RELATED RIGHTS - Legal protection of copyright and related rights, exercise of copyright and related rights; individual and collective exercise, substantive and temporal restrictions on copyright and related rights, EU acquis communautaire, conventional copyright, unification of copyright, copyright protection in the digital single market.	5,6	They listen to a lecture and read literature. They use multimedia and networking. In group work on exercises, the brainstorming method and the discussion method on the topic are applied.	The colloquium or written / oral exam knows define individual and collective management of copyright, and civil, criminal and misdemeanor aspects of copyright and related rights and the protection of copyright and related rights at EU level. Practical work drafted and presented (using computer programs and sources of case law and other legal practice independently).	6	
	60.	ENFORCEMENT OF INTELLECTUAL PROPERTY RIGHTS (inter vivos and mortis causa) - cession agreement, license agreement, special software licenses, distribution agreement, franchising agreement, copyright agreements Concluding Considerations / Repetition and Exam Preparation.	4,7	They listen to a lecture and read literature. They use multimedia and networking. In group work on exercises, the brainstorming method and the discussion method on the topic are applied.		16	

3. EVALUATION OF STUDENTS` WORK

3.1. Students` obligations	In accordance with the Regulations on Studying and the Regulations on Student Assessment and Evaluation: for all full-time students attendance of at least 70%. Part-time students are required to attend classes at least 50%. All students are required to carry calculator and formulae list. Students who have during the course achieved: • from 0 - 24,9% ECTS credits- are rated F (unsuccessful) and cannot obtain ECTS credits, and must re-enroll in the next academic year; • from 25 - 49,9% - are assessed by FX (insufficient) and must pass the written exam (test). Written exam (test) can be held in a regular or extraordinary exam period; • more than 50% - students have the right to take the final exam. Students can take the final exam from the course in two ways: a) during the course of teaching through continuous monitoring of students (active participation in classes and through three colloquia); b) by passing the exam (written and oral part of the exam).					
3.2. Monitoring student work (enter the share of ECTS credits for each activity so that the total number of ECTS points corresponds to the credit score of the course)	Attendance	1	Written exam	1 (without colloquia)	Project	
	Experimental work		Research		Practical work	0,5
	Essay		Report		Continuous examination	
	Colloquium	1,5 (without written exam)	Seminar paper	0,5	Other	
	Class activity		Oral exam	0,5 (without colloquia)	Other	
3.3. Student workload	Student workload on all bases for 1 ECTS credit is 30 hours in a semester and is estimated as: 1. Attending classes 360 hours 2. Creation of practical work, seminar paper and presentation 15 hours 3. Preparing colloquia or exams through individual work 45 hours					

4. GRADING SYSTEM

4.1. Grading seminar papers	

4.2. Grading colloquia/ written and oral exam	**Unsatisfactory**	**Satisfactory**	**Above average**
	Responds by memory, without a deeper understanding. Does not know or apply basic terms and concepts. Does not know how to apply or explain the contents of the course with examples.	Reproduces the basic concepts and without difficulty imparts new knowledge, understands the material, explains the terms and concepts supported with examples.	Knowledge is at the level of analysis, synthesis and evaluation. Observes the principles, accurately and thoroughly explains the content of the material, and logically connects and explains the terms and concepts supported with examples. Finds solutions that were not originally given. Notes correlations with related material.

4.3. Final grade according to evaluation elements					
	Active course attendance	70-74,9% of attendance	75-79,9% of attendance	80-89,9% of attendance	90-100% of attendance
		2 points	5 points	10 points	20 points
	Colloquia/ Written exam	2	3	4	5
		50-64,9%	65-79,9%	80-89,9%	90-100%
		25 points	30 points	35 points	40 points
	Oral exam	2	3	5	5
		25 points	30 points	35 points	40 points

4.3. Final grade according to absolute division	Percentage of acquired knowledge, skills and competences (teaching + final exam)	Numerical grade	ECTS grade
	90 – 100%	5 (excellent)	A
	80 – 89,9%	4 (very good)	B
	65 – 79,9%	3 (good)	C
	60 – 64,9%	2 (satisfactory)	D
	50 – 59,9%	2 (satisfactory)	E

5. ADDITIONAL COURSE INFORMATION

5.1. Compulsory literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**
	D. Zlatović, Upravljanje trgovačkim društvima, Libertin naklada, Rijeka, 2014. (izabrana poglavlja)	10	YES
	J. Čizmić, M. Boban, D. Zlatović, Nove tehnologije, intelektualno vlasništvo i informacijska sigurnost, Pravni fakultet u Splitu, Split, 2016. (izabrana poglavlja)	10	

5.2. Additional literature (at the moment of changes and/or amended of study programme)	
	I. Henneberg; Autorsko pravo; Informator, Zagreb, 2001. I. Gliha; Copyright in Croatia; Thomson Reuters/West, 2010. D. Zlatović, Upravljanje intelektualnim vlasništvom i marketing, Libertin naklada, Rijeka, 2018. Zakon o trgovačkim društvima Zakon o sudskom registru

	Zakon o obveznim odnosima Zakon o autorskom pravu i srodnim pravima Zakon o patentu Zakon o žigu Zakon o industrijskom dizajnu
5.3. Quality assurance methods that ensure the acquisition of knowledge, skills and competences	The control of students' work quality and the acquisition of necessary knowledge and skills will be ensured through interactive work. By keeping track of attendance and student activity during classes and provided information on students` progress through short colloquiums and homework, information for further guidance to students will be provided in order to increase the efficiency of their work. Students will be informed about their rights and obligations as well as the methods of work and the required literature. Indicators of quality assurance system: Student survey, monitoring of annual data from the Croatian employment service on the annual state of student employment, surveys from employers and Alumni association.
5.4. Informing about the course and contacting the teacher	It is the responsibility of each student to be regularly informed about the course, the coursework, and the classroom activities. All notices of classes or possible adjournment will be published in a timely manner on the e-learning site of the course and on the website of the Polytechnic. Students can contact teachers during the consultation period (at least one hour per week), while for short questions and explanations they can be contacted during class. It is also possible to ask questions by e-mail (from the official e-mail address at @ vus.hr), which will be answered as soon as possible (no later than five working days after receiving the e-mail).

1. GENERAL INFORMATION ABOUT THE SUBJECT			
1.1. Title	**Principles of Marketing**	1.8. ISVU course code	201320
1.2. Lecturer	**Jelena Šišara, univ.spec.oec.**	1.9. MOZVAG course code	
1.3. Assistants and/or associates	None	1.10. Forms of teaching (number of hours Lecturing +Practical exercises + Seminars + e learning)	(30+0+15+0)
1.4. Study programme (specialist, undergraduate, graduate)	**Professional Undergraduate study of Business Informatics**	1.11. Level of e- learning application (1st, 2nd, 3rd level), percentage of on line course performance (max. 20%)	1st – materials available On-line, 0%
1.5. Course status (obligatory, optional)	Obligatory	1.12. Number of course revisions	1.
1.6. Study year	2st	1.13. Modernization	▪ yes □ no
1.7. Credit score (ECTS)	3	1.14. Percentage estimate of course changes and/or supplements	Less than 20% ▪ More than 20 % □

2. COURSE DESCRIPTION	
2.1. Course objectives	The aim of the course is to acquaint students with the specifics of applying the marketing concept in order to apply the acquired knowledge and skills in a real business environment.
2.2. Terms of course entry and required competences	Admission requirements for the 2nd year of study
2.3. Learning outcomes on the study programme level	LO1: To evaluate various digital channels in marketing campaigns and create and implement a digital marketing plan
	LO9: To select appropriate professional literature in Croatian and foreign languages, prepare and independently hold presentations in Croatian and foreign languages to professional and general audiences, and critically evaluate the presented professional topics

	LO14: To successfully communicate with clients, users and colleagues verbally and in writing using appropriate terminology including the ability to communicate about the profession in a foreign language
	LO15: To compare and select appropriate development tools at the professional level
	LO17: To conclude what are the basic principles and methods of quality project management and work successfully in a team

2.4. Expected learning outcomes on the course level	**Learning outcomes** towards Bloom's taxonomy: (up to two verbs per LO)	**LO Level:** *25. Recapture,* *26. Understanding,* *27. Application,* *28. Analysis,* *29. Evaluation,* 30. *Synthesis*
	1. To explain and critically evaluate the basic concepts and characteristics of marketing;	2, 5
	2. To analyze marketing strategies and to make them on concrete examples;	4, 6
	3. To analyze the marketing environment on a concrete example;	4
	4. To design specific marketing activities that create value in accordance with the needs and desires of customers / clients.	6
	5. To develop a marketing plan for a company.	5,6
	6. Based on the example provided, to critically evaluate marketing mix of a company and to propose tools for e-marketing.	5,6
	11.	
	12.	
	13.	
	14.	

2.5. Course content according to detailed curriculum schedule

Constructive alignment

No:	Thematic ensemble / Lecture Topic	Course LO	Content / Teaching Method	Evaluation	Time needed
61.	Introduction to the course and a detailed performance plan	-	Listen to the lecture. On seminary teaching, by independent work on the computer students get acquainted with course content and documents on the e-learning course page.	-	6 hours
62.	Understanding of marketing processes	1, 4	They listen to a lecture, solve case studies.	At the colloquium or the written and oral exam, they define the basic marketing concepts, explain the basic marketing concepts and marketing processes,	6 hours
63.	Features of services	1, 4	They listen to a lecture, solve case studies, present a seminar paper, followed by a discussion	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they should present and analyze the same on a concrete example, critically judge on the basis of the presented problem and propose a solution to the same problem.	8 hours

	64.	The role of marketing in strategic planning	1, 2, 4	They listen to a lecture, solve case studies, present a seminar paper, followed by a discussion	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they should present and analyze the same on a concrete example, critically judge on the basis of the presented problem and propose a solution to the same problem.	10 hours
	65.	Development of marketing opportunities and strategies	1, 2, 4	They listen to a lecture, solve case studies, present a seminar paper, followed by a discussion	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they should present and analyze the same on a concrete example, critically judge on the basis of the presented problem and propose a solution to the same problem.	10 hours
	66.	Marketing environment	1, 3, 4	They listen to a lecture, solve case studies, present a seminar paper, followed by a discussion	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they should present and analyze the same on a concrete example, critically judge on the basis of the presented problem and propose a solution to the same problem.	10 hours
	67.	Marketing plan	1, 4, 5	They listen to a lecture, solve case studies, develop a marketing plan for a tourism company	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they should present and analyze the same on a concrete example, critically judge on the basis of the presented problem and propose a solution to the same problem.	12 hours
	68.	Marketing Information System and Marketing Research, I. Colloquium	1, 4, 5	They listen to a lecture, solve case studies, develop a marketing plan for a tourism company	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they should present and analyze the same on a concrete example, critically judge on the basis of the presented problem and propose a solution to the same problem.	12 hours
	69.	Markets of final consumption and consumer behavior	1, 4, 5	They listen to a lecture, solve case studies, develop a marketing plan for a tourism company	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they should present and analyze the same on a concrete example, critically judge on the basis of the presented problem and propose a solution to the same problem.	12 hours
	70.	Market segmentation and market positioning	1, 2, 3, 4, 5	They listen to a lecture, solve case studies, develop a marketing plan for a tourism company	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they should present and analyze the same on a concrete example, critically judge on the basis of the presented problem and propose a solution to the same problem.	15 hours
	71.	Development of marketing mix: production and product management	1, 2, 3, 4, 5, 6	They listen to a lecture, solve case studies, develop a marketing plan for a tourism company	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they should present and analyze the same on a concrete example, critically judge on the basis of the presented problem and propose a solution to the same problem.	8 hours

	72.	Development of marketing mix: price and placement	1, 2, 3, 4, 5, 6	They listen to a lecture, solve case studies, develop a marketing plan for a tourism company	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they should present and analyze the same on a concrete example, critically judge on the basis of the presented problem and propose a solution to the same problem.	8 hours
	73.	Development of the marketing mix: promotion	1, 2, 3, 4, 5, 6	They listen to a lecture, solve case studies, develop a marketing plan for a tourism company	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they should present and analyze the same on a concrete example, critically judge on the basis of the presented problem and propose a solution to the same problem.	8 hours
	74.	Marketing management	1, 2, 3, 5, 6	They listen to a lecture, present a marketing plan	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they should present and analyze the same on a concrete example, critically judge on the basis of the presented problem and propose a solution to the same problem.	15 hours
	75.	Final lecture, course signatures, II. colloquium		They listen to a lecture, present a marketing plan	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they should present and analyze the same on a concrete example, critically judge on the basis of the presented problem and propose a solution to the same problem.	4 hours

3. EVALUATION OF STUDENT WORK

3.1. Students` obligations

In accordance with the Book of Rules and the Rulebook on Student Assessment and Evaluation: for all regular students attend at least 70% attendance. Part-time students have the obligation to attend at least 50% of lectures. All students must create, present and positively colloquy seminar paper.

Students who have during the course achieved:

- From 0 – 24,9% ECTS credits- is rated F (unsuccessful) and cannot get ECTS credits and must re-enrol the subject in the next academic year;
- From 25 – 49,9% ECTS credits - is rated FX (inadequate) and has to come out and pass the test (exam). A written exam can be held in a regular or extraordinary exam period;
- More than 50% ECTS credits - students have the right to access the final exam of the subject.

Students can pass the final exam in two ways: a) during the course through continuous student attendance (active participation in the lessons, solving case studies, making and presenting the seminar paper and project, passing two colloquia); b) during the course (active participation in the lessons, solving case studies, creating and presenting the seminar paper and project) and passing the exam (written and oral exam).

3.2. Monitoring student work (enter the share of ECTS credits for each activity so that the total number of ECTS points corresponds to the credit score of the course)

Attendance		Written exam	1 (by submitting both colloquiums the student is relieved of an written examination)	Project	0,5
Experimental work		Research		Practical work	
Essay		Report		Continuous examination	
Colloquium	2 (by submitting both colloquiums the student is	Seminar paper	0,5	Other (inscribe)	

		relieved of a written and oral examination)				
	Class activities		Oral exam	1 (by submitting both colloquiums the student is relieved of an oral examination)	Other (inscribe)	

3.3. Student workload

The student's workload on all bases amounts to 1 ECTS point for 30 hours of work per semester and is estimated as:

Commitment	***Hours (estimate)***
18. Attending classes	45
19. Creating and Presenting seminar paper	25
20. Preparation for the Colloquium / exam through self-study	20

4. GRADING

4.1. Seminar paper grading

Valuation Element	**Poor**	**Satisfying**	**Above average**
Organization	The paper is not organized in a logical order and its structure is lacking.	The paper is well structured with a clear distinction between the introduction, the main part of the text and the conclusion.	The paper is well-structured with a clear distinction between the introduction, the main part of the text and the conclusions that are perfectly logically linked to one another
Terminology, writing style	Words and phrases are low harmonized with official terminology. Writing style is not appropriate, sentences are too long, modest vocabulary, and frequent and repeated grammatical mistakes.	Words and phrases are aligned with official terminology. The writing style is appropriate, the sentence structure is clear, the vocabulary is appropriate and has little grammatical errors.	Words and phrases are aligned with official terminology and show an understanding of their meaning. The writing style is excellent, the sentences are clear and concise, the vocabulary is rich and there are no grammatical errors.
Quoting and referencing	Sources are not specified at all. The references do not match the topic and show a superficial approach to the research topic.	Sources are listed, but incomplete and with errors. The references are appropriate for the subject and show a satisfactory research attitude.	Sources are accurate, complete and consistent. The references are appropriate, their list is "rich" and comprehensive and shows a robust research approach.

4.2. Colloquium / exam grading

Poor	**Satisfying**	**Above average**
Give answer by memory, no deeper understanding. Does not know and does not apply the basic terms and concepts. Cannot apply or explain the contents of the course.	Reproduces basic terms, without difficulty transfers new knowledge, understands subject matter, explains the terms and the notions that substantiate by examples.	Knowledge is at the level of analysis, synthesis and evaluation. It observes legitimacy, accurately and thoroughly explains the content of the subject, and logically links and explains the terms and concepts that it encapsulates. Find solutions that are not originally given. There is a correlation with correlative subjects.

	70-75% of attendance	76-86% of attendance	87-100% of attendance	Solved case study and project	

4.3. Creating a final grade according to evaluation elements	Active participation in the lessons	2 points	4 points	7 points	3 points
	Seminar paper	2	3	4	5
		5 points	7 points	8 points	10 points
	Colloquium / written exam	2	3	4	5
		50-64,9%	65-79,9%	80-89,9%	90-100%
		25 points	30 points	35 points	40 points
	Oral exam	2	3	5	5
		25 points	30 points	35 points	40 points

4.4. Creating a final grade according to absolute allocation

Percentage of adopted knowledge, skills and competences (teaching + final exam)	Numerous grade	ECTS grade
90 – 100%	5 (excellent)	A
80 – 89,9%	4 (very good)	B
65 – 79,9%	3 (good)	C
60 – 64,9%	2 (sufficient)	D
50 – 59,9%	2 (sufficient)	E

5. ADDITIONAL INFORMATION ABOUT THE COURSE

	Title	Number of copies in the library	Availability via other media
5.1. Compulsory literature (available in the library and through other media)	1. Kotler, P., Armstrong, G. (2013). *Principles of Marketing*, Prentice Hall, Boston	0	
	2. Kotler, P. (2001). *Upravljanje Marketingom, Analiza, Planiranje, Primjena i Kontrola*. Informator, Zagreb	3	
5.2. Additional literature (at the moment of changes and/or amended of study programme)			
5.3. Quality assurance methods that ensure the acquisition of knowledge, skills and competences	The control of students' work quality and the acquisition of necessary knowledge and skills will be ensured through interactive work. By keeping track of attendance and student activity during classes and provided information on students` progress through short colloquiums and homework, information for further guidance to students will be provided in order to increase the efficiency of their work. Students will be informed about their rights and obligations as well as the methods of work and the required literature. Indicators of quality assurance system: Student survey, monitoring of annual data from the Croatian employment service on the annual state of student employment, surveys from employers and Alumni association.		

5.4. information on the course and contact with the teacher	It is obligatory for every student to regularly inform about the course, teaching and teaching activities. All information about teaching or any delay in teaching will be published on the e-learning pages of the course and on the web pages of the Polytechnic. Students can contact the teachers during the consultation term (at least one hour per week), while brief questions and explanations can be addressed during classes. It is possible to ask questions by e-mail (from the official e-mail address from the domain @ vus.hr) that will be answered in a short time (no later than five working days from the receipt of e-mail).

IV. SEMESTER

2. GENERAL INFORMATION			
1.1. Course lecturer	Ana Perišić	1.8. Course code in ISVU	201321 202221
1.2. Course title	**Business statistics**	1.9. Course code in MOZVAG	
1.3. Assistants and/or associates		1.10. Forms of teaching (number of hours Lecturing +Practical exercises + Seminars + e learning)	(30+30+0+0)
1.4. Study programme (specialist, undergraduate, graduate)	Undergraduate Professional study Business Informatics	1.11. Level of e- learning application (1st, 2nd, 3rd level), percentage of on line course performance (max. 20%)	1st, course materials are on-line, 0%
1.5. Course status	Mandatory	1.12. Number of course revisions	2
1.6. Year of study	2nd	1.14. Modernization	Yes
1.7. Credit score (ECTS)	6	1.14. Percentage estimate of course changes and/or supplements	Less than 20% X□ More than 20 % □

2. COURSE DESCRIPTION		
2.1. Course objectives	Train students to be able to comprehend, effectively understand and recognize fundamental statistical procedures and methods; Provide theoretical and practical knowledge which enables students to develop and apply acquired knowledge, independently and/or within a team.	
2.2. Terms of course entry and required competences	4 year secondary education completed; qualification level 4.2 according to the CROQF.	
2.3. Learning outcomes on the study programme level	LO6: Correctly write and interpret basic concepts in the field of economics and economics of enterprises, entrepreneurs and entrepreneurship and correctly interpret their interdependencies LO7: Select and apply mathematical methods, models and techniques appropriate for solving problems in the field of Business Information Systems LO16: Valorize the important factors that affect the business of the organization and individuals, and apply the basic methods and concepts of planning, management and accounting of business	
2.4. Expected learning outcomes on the course level	**Learning outcomes** accroding to the Bloom`s taxonomy: (up to two verbs per LO)	**Level of LO:** *1- remembering,* *2- understanding,* *3- application,* *4-analysis,* *5-evaluation,* *6-synthesis*
	1. To define and explain fundamental concepts of descriptive statistics	1,2

2.	To prepare tabular and graphical data representation of statistical data	3,4
3.	To calculate and to interpret measures of central tendency and measures of dispersion	3,4
4.	To perform correlation and regression analysis, to comment the results and to draw a conclusion about the relationship between variables	3,4,5
5.	To identify time series type	4
6.	To calculate and to interpret values of dynamics indicators	3,2
7.	To estimate the linear trend equation and to apply it for forecasting future values of the time series	3,4,6
8.	To set the statistical hypothesis and to conduct the chi square test.	6,3

2.5. Course content according to detailed curriculum schedule

Constructive allignement

no	Thematic unit	LO of the course	Content/teaching methods	Evaluation	Time
1.	Introduction into the course and detailed plan. Fundamental statistical terms	1	Attending lectures. Familiarize with course content, e-learning documents, literature and students' obligations.	Students define and explain fundamental concepts of descriptive statistics through colloquia or written/oral exams.	1 h 8h 16 h
2.	Grouping data and graphical data representation	2	Attending lectures. Actively involving students through problem solving and discussion.	Students will prepare tabular and graphical data representation of statistical data through colloquia or written/oral exams.	4h 8h
3.	Measures of central tendency	1,3	Attending lectures. Actively involving students through problem solving and discussion.	Students will define and explain fundamental concepts of descriptive statistics and calculate and to interpret measures of central tendency and measures of dispersion through colloquia or written/oral exams.	4h 8h
4.	Measures of central tendency	1,3	Attending lectures. Actively involving students through problem solving and discussion.	Students will define and explain fundamental concepts of descriptive statistics, calculate and interpret measures of central tendency and measures of dispersion through colloquia or written/oral exams.	4h 8h
5.	Measures of dispersion	1,3	Attending lectures. Actively involving students through problem solving and discussion.	Students will define and explain fundamental concepts of descriptive statistics and calculate and interpret measures of central tendency and measures of dispersion through colloquia or written/oral exams.	4h 8h
6.	Standardized value. Outlies. Data distribution rules. Exam preparation	1,3	Attending lectures. Actively involving students through problem solving and discussion. Group problem solving and discussion. Exam preparation.	Students will define and explain fundamental concepts of descriptive statistics and calculate and interpret measures of central tendency and	6h 12h

				measures of dispersion through colloquia or written/oral exams.		
7.	Time series	5	Attending lectures. Actively involving students through problem solving and discussion.	Students will identify time series type through colloquia or written/oral exams.	4h 8h	
8.	Index numbers	6	Attending lectures. Actively involving students through problem solving and discussion.	Students will calculate and interpret the values of dynamics indicators through colloquia or written/oral exams.	5h 10h	
9.	Trend	7	Attending lectures. Actively involving students through problem solving and discussion.	Students will estimate the linear trend equation and apply it for forecasting future values of the time series through colloquia or written/oral exams.	6h 12h	
10.	Correlation and regression	4	Attending lectures. Actively involving students through problem solving and discussion.	Students will perform correlation and regression analysis, comment the results and draw a conclusion about the relationship between variables through colloquia or written/oral exams.	6h 12h	
11.	Chi-square test	8	Attending lectures. Actively involving students through problem solving and discussion.	Students will set the statistical hypothesis and conduct the chi square test through colloquia or written/oral exams.	6h 12h	
12.	Final conclusions. Exam preparation		Attending lectures. Actively involving students through problem solving and discussion. Group problem solving and discussion. Exam preparation.		2h 6h	

3. EVALUATION OF STUDENTS` WORK

3.1. Students` obligations

In accordance with the Regulations on Studying and the Regulations on Student Assessment and Evaluation: for all full-time students attendance of at least 70%. Part-time students are required to attend classes at least 50%. All students are required to carry calculator and formulae list.
Students who have during the course achieved:

- from 0 - 24,9% ECTS credits- are rated F (unsuccessful) and cannot obtain ECTS credits, and must re-enroll in the next academic year;
- from 25 - 49,9% - are assessed by FX (insufficient) and must pass the written exam (test). Written exam (test) can be held in a regular or extraordinary exam period;
- more than 50% - students have the right to take the final exam.

Students can take the final exam from the course in two ways: a) during the course of teaching through continuous monitoring of students (active participation in classes and through two colloquia); b) by passing the exam (written and oral part of the exam).

3.2. Monitoring student work (enter the share of ECTS credits for each activity so that the total number of ECTS points corresponds to the credit score of the course)

Attendance	0,5	Written exam	3,5 (without colloquia)	Project	
Experimental work		Research		Practical work	
Essay		Report		Continuous examination	0,5
Colloquium	3,5 (without written exam)	Seminar paper		Other	

	Class activity	0,5	Oral exam	1	Other	
3.3. Student workload	Student workload on all bases for 1 ECTS credit is 30 hours in a semester and is estimated as: Attending classes and exercises 60 hours Preparing colloquia or exams through individual work 120 hours					

4. GRADING SYSTEM

4.1. Grading seminar papers

4.2. Grading colloquia/ written and oral exam

Unsatisfactory	Satisfactory	Above average
Responds by memory, without a deeper understanding. Does not know or apply basic terms and concepts. Does not know how to apply or explain the contents of the course with examples.	Reproduces the basic concepts and without difficulty imparts new knowledge, understands the material, explains the terms and concepts supported with examples.	Knowledge is at the level of analysis, synthesis and evaluation. Observes the principles, accurately and thoroughly explains the content of the material, and logically connects and explains the terms and concepts supported with examples. Finds solutions that were not originally given. Notes correlations with related material.

4.3. Final grade according to evaluation elements

During the semester, students have the possibility to partially take written exams through colloquia (twice during the semester). In order to have access to the oral exam, students need to achieve at least 50% on each colloquium. Also, students have a possibility to retake one colloquium. Students who did not pass at least one colloquia (or retaken colloquia) need to take part in the written exam. In this case, in order to have access to the oral exam, students need to achieve at least 50% on written exam. The final grade is formed after the oral exam by aggregating scores achieved through the written exam/colloquia, oral exam and during classes.

4.3. Final grade according to absolute division

Percentage of acquired knowledge, skills and competences (teaching + final exam)	Numerical grade	ECTS grade
90 – 100%	5 (excellent)	A
80 – 89,9%	4 (very good)	B
65 – 79,9%	3 (good)	C
60 – 64,9%	2 (satisfactory)	D
50 – 59,9%	2 (satisfactory)	E

5. ADDITIONAL COURSE INFORMATION

	Title	Number of copies in the library	Availability via other media
5.1. Compulsory literature (available in the library and via other media)	Dumičić, K. i suradnici (2011) Poslovna statistika. Zagreb: Element (odabrana poglavlja) Šošić I., Primijenjena statistika, Školska knjiga, Zagreb, 2004.	5 12	
5.2. Additional literature (at the moment of changes and/or amended of study programme)	Šošić I., Serdar V., Uvod u statistiku, Školska knjiga, Zagreb, 2002. Azcel A. Sounderpandian J., Complete Business Statistics, McGraw Hill, 2009. Čižmešija M., Kurnoga Živadinović N., Zbirka riješenih zadataka iz osnova statistike, Mirorad d.o.o., Zagreb,2006		

	Patrick R. McMullen, Poslovna statistika za stručne studije [prijevod Devčić,K., Perišić,A.], Veleučilište u Šibeniku, 2017 Teaching materials
5.3. Quality assurance methods that ensure the acquisition of knowledge, skills and competences	The control of students' work quality and the acquisition of necessary knowledge and skills will be ensured through interactive work. By keeping track of attendance and student activity during classes and provided information on students` progress through short colloquiums and homework, information for further guidance to students will be provided in order to increase the efficiency of their work. Students will be informed about their rights and obligations as well as the methods of work and the required literature. Indicators of quality assurance system: Student survey, monitoring of annual data from the Croatian employment service on the annual state of student employment, surveys from employers and Alumni association.
5.4. Informing about the course and contacting the teacher	It is the responsibility of each student to be regularly informed about the course, the coursework, and the classroom activities. All notices of classes or possible adjournment will be published in a timely manner on the e-learning site of the course and on the website of the Polytechnic. Students can contact teachers during the consultation period (at least one hour per week), while for short questions and explanations they can be contacted during class. It is also possible to ask questions by e-mail (from the official e-mail address at @ vus.hr), which will be answered as soon as possible (no later than five working days after receiving the e-mail).

1. GENERAL COURSE INFORMATION			
1.1. Course title	**Introduction to Computer Networks**	1.8. Course code in ISVU	201324
1.2. Course lecturer	Zvonimir Klarin	1.9. Course code in MOZVAG	
1.3. Assistants and/or associates	Zvonimir Klarin, mag.ing.comp, teaching assistant	1.10. Forms of teaching (number of hours Lecturing +Practical exercises + Seminars + e learning)	(30+30+0+0)
1.4. Study programme (specialist, undergraduate, graduate)	**Undergraduate Professional Study of Business Informatics**	1.11. Level of e- learning application (1st, 2nd, 3rd level), percentage of on line course performance (max. 20%)	1st, course materials are on-line, 0%
1.5. Course status (mandatory, elective)	Mandatory	1.12. Number of course revisions	2.
1.6. Year of study	2nd	1.15. Modernization	Yes
1.7. Credit score (ECTS)	4	1.14. Percentage estimate of course changes and/or supplements	Less than 20% X□ More than 20 % □

2. COURSE DESCRIPTION	
2.1. Course objectives	Gain basic knowledge of networking technologies, transmission media, network devices and standards. Students will apply the acquired knowledge in a small local network.
2.2. Terms of course entry and required competences	Completed a four-year high school education; possession of a qualification at level 4.2 according to the CROQF.
2.3. .Learning outcomes on the study programme level	LO1: Analyze the situation, identify opportunities and anticipate the problems encountered by organizations and individuals in the application of information technologies. LO5: Interpret mechanisms of data flow control, error control and fragmentation, ways of multiplexing data transmission using routing methods in computer networks LO10: To support and apply ethical and environmental principles as well as legislation and standards that are applicable in information technologies LO11: Link the activities of building and maintaining information system with the needs of clients and users. LO13: Range security threats and choose appropriate countermeasures to protect the information system.

2.4. Expected learning outcomes on the course level	**Learning outcomes** accroding to the Bloom`s taxonomy: (up to two verbs per LO)	**Level of LO:** *1- remembering, 2- understanding, 3- application, 4-analysis, 5-evaluation, 6-synthesis*
	8. Define and distinguish the basic concepts of networking technologies.	1, 3
	9. Describe and distinguish data transmission standards.	2, 4
	10. Evaluate the use of different media in data transmission.	5
	11. Explain and evaluate the network address space.	2,5
	12. Solve the basic addressing of simple networks.	4
	13. Distinguish between mobile and wireless networks.	4

2.5. Course content according to detailed curriculum schedule

Constructive allignement

no	Thematic unit	LO of the course	Content/teaching methods	Evaluation	Time
76.	Introduction to the course and detailed curriculum	-	Listen to lectures. During the exercises, get acquainted with the content of the course and documents on the e-learning platform of the course.	-	4 h
77.	History of communication networks	1	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Explain the development of communication technologies throughout history.	4 hi
78.	OSI reference model and Ethernet standard	1,2	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Distinguish and explain different standards.	4 h
79.	Transmission media in computer networks	3	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Distinguish different types of transmission media in relation to application.	4 h
80.	Ethernet technologies	2	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Distinguish and explain various data transmission technologies	4 h
81.	Ethernet switching	1, 2, 3	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Explain the function and application of the switch in local area network.	4 h
82.	TCP/IP protocol suite	4	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Explain the TCP/IP protocol suite.	4 h
83.	LAN and WAN structured cabling	3	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Distinguish and explain different types of cabling.	4 h
84.	IP addresses	4	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Explain address spaces and subnetting.	4 h

	85.	Routing basics	4,5	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Explain the basics of Internet routing.	4 h
	86.	Network and broadcast addresses	4, 5	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Calculate basic network addresses.	8 h
	87.	Transport and application layer	4, 5	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Explain the functions of OSI layers.	4 h
	88.	Internet Protocol version 6	4,5	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Describe the IPv6 protocol.	4 h
	89.	Wireless and mobile networks	4, 5, 6	Listen to lectures, read literature, and prepare individually for the colloquium.	Describe the basic functions of wireless and mobile networks.	4 h
	90.	Concluding remarks and preparation for the exam	6	Listen to lectures and prepare for the exam individually.	-	64 h

3. EVALUATION OF STUDENTS` WORK

3.1. Students` obligations	In accordance with the Regulations on Studying and the Regulations on Student Assessment and Evaluation: for all full-time students attendance of at least 70%. Part-time students are required to attend classes at least 50%. Students who have during the course achieved: • from 0 - 24,9% ECTS credits- are rated F (unsuccessful) and cannot obtain ECTS credits, and must re-enroll in the next academic year; • from 25 - 49,9% - are assessed by FX (insufficient) and must pass the written exam (test). Written exam (test) can be held in a regular or extraordinary exam period; • more than 50% - students have the right to take the final exam. Students can take the final exam from the course in two ways: a) during the course of teaching through continuous monitoring of students (active participation in classes); b) by passing the exam (written and oral part of the exam).					
3.2. Monitoring student work (enter the share of ECTS credits for each activity so that the total number of ECTS points corresponds to the credit score of the course))	Attendance	0,5	Written exam	2	Project	
	Experimental work		Research		Practical work	
	Essay		Report		Continuous examination	1
	Colloquium		Seminar paper		Other	
	Class activity	0,5	Oral exam	1	Other	
3.3. . Student workload	Student workload on all bases for 1 ECTS credit is 30 hours in a semester and is estimated as: 1. Attending classes and exercises 60 hours 2. Preparing colloquia or exams through individual work 60 hours					

4. FORMIRANJE OCJENE

4.1. Grading seminar papers	-

4.2. Grading colloquia/ written and oral exam	**Unsatisfactory**	**Satisfactory**	**Above average**
	Responds by memory, without a deeper understanding. Does not know or apply basic terms and concepts. Does not know how to apply or explain the contents of the course with examples.	Reproduces the basic concepts and without difficulty imparts new knowledge, understands the material, explains the terms and concepts supported with examples.	Knowledge is at the level of analysis, synthesis and evaluation. Observes the principles, accurately and thoroughly explains the content of the material, and logically connects and explains the terms and concepts supported with examples. Finds solutions that were not originally given. Notes correlations with related material.

4.3. Final grade according to evaluation elements	Active course attendance	70-74,9% of attendance	75-79,9% of attendance	80-89,9% of attendance	90-100% of attendance
		2 points	5 points	10 points	20 points
	Colloquia/ Written exam	2	3	4	5
		50-64,9%	65-79,9%	80-89,9%	90-100%
		25 points	30 points	35 points	40 points
	Oral exam	2	3	5	5
		25 points	30 points	35 points	40 points

4.4. Final grade according to absolute division	Percentage of acquired knowledge, skills and competences (teaching + final exam)	Numerical grade	ECTS grade
	90 – 100%	5 (excellent)	A
	80 – 89,9%	4 (very good)	B
	65 – 79,9%	3 (good)	C
	60 – 64,9%	2 (satisfactory)	D
	50 – 59,9%	2 (satisfactory)	E

5. ADDITIONAL COURSE INFORMATION

	Title	**Number of copies in the library**	**Availability via other media**
5.1. Compulsory literature (available in the library and via other media)	4. Cisco Certified Network Associate (CCNA), CISCO, 2012. 5. Computer Networks (5th edition),Tanenbaum,Wetherall,2011		Avaialble on the e-learning page of the course
5.2. Additional literature (at the moment of changes and/or amended of study programme)	Introduction to Computer Networks		Avaialble on the e-learning page of the course

5.3. Quality assurance methods that ensure the acquisition of knowledge, skills and competences	The control of students' work quality and the acquisition of necessary knowledge and skills will be ensured through interactive work. By keeping track of attendance and student activity during classes and provided information on students` progress through short colloquiums and homework, information for further guidance to students will be provided in order to increase the efficiency of their work. Students will be informed about their rights and obligations as well as the methods of work and the required literature. Indicators of quality assurance system: Student survey, monitoring of annual data from the Croatian employment service on the annual state of student employment, surveys from employers and Alumni association.
5.4. Informing about the course and contacting the teacher	It is the responsibility of each student to be regularly informed about the course, the coursework, and the classroom activities. All notices of classes or possible adjournment will be published in a timely manner on the e-learning site of the course and on the website of the Polytechnic. Students can contact teachers during the consultation period (at least one hour per week), while for short questions and explanations they can be contacted during class. It is also possible to ask questions by e-mail (from the official e-mail address at @ vus.hr), which will be answered as soon as possible (no later than five working days after receiving the e-mail).

1. GENERAL INFORMATION ABOUT THE SUBJECT			
1.1. Title	**Business Information Systems**	1.8. ISVU course code	201315
1.2. Lecturer	Frane Urem PhD prof	1.9. MOZVAG course code	
1.3. Assistants and/or associates	Želimir Mikulić, s.lec.	1.10. Forms of teaching (number of hours Lecturing +Practical exercises + Seminars + e learning)	(30+30+0+0)
1.4. Study programme (specialist, undergraduate, graduate)	undergraduate	1.11. Level of e- learning application (1st, 2nd, 3rd level), percentage of on line course performance (max. 20%)	3rd – materials available On-line, 0%
1.5. Course status (mandatory, elective)	mandatory	1.12. Number of course revisions	1.
1.6. Study year	2	1.13. Modernization	■ yes □ no
1.7. Credit score (ECTS)	6	1.14. Percentage estimate of course changes and/or supplements	Less than 20% ■ More than 20 % □

2. COURSE DESCRIPTION	
2.1. Course objectives	Introduce the student to the concepts of business information systems
2.2. Terms of course entry and required competences	Four-year high school education completed; having a qualification at level 4.2
2.3. Learning outcomes on the study programme level	IU9 Select appropriate professional literature in Croatian and foreign languages, prepare and independently deliver presentations in Croatian and foreign languages to expert and general audiences, and critically evaluate the presented professional topics

	IU12. Apply key aspects of information technology (programming, algorithms, data structures, databases and project management in the field of information technology)	
	IU15. Compare and select appropriate development tools at expert level	
2.4. Expected learning outcomes on the course level	**Learning outcomes** towards Bloom's taxonomy: (up to two verbs per LO)	**LO Level:** *31. Recapture,* *32. Understanding,* *33. Application,* *34. Analysis,* *35. Evaluation,* 36. *Synthesis*
	1. Understand the concept of systems and the importance of a systematic approach to analysis and a business information system.	1,2
	2. Identify system boundaries, external and internal stakeholders and relationships among them and understand the risks that arise.	2,3,4,5,6
	3. Understand the role of key system components and is able to identify processes and define procedures within an information system to support them.	2,3,4,5,6
	4. Identify security threats in the system and propose techniques for their removal.	2,3,4,5,6
	5. Use the software tools available within the MS Office suite to collect and analyze data.	2,3,4,5,6
	6. Implement and deploy the appropriate ready-made business applications.	2,3,4,5,6
	7. Understand the concept of systems and the importance of a systematic approach to analysis and a business information system.	1,2

	Constructive alignment					
	No:	**Thematic ensemble / Lecture Topic**	**Course LO**	**Content / Teaching Method**	**Evaluation**	**Time needed**
2.5. Course content according to detailed curriculum schedule	1.	Introduction to the course and detailed curriculum.	-			2 hours
		Basic terms	1,2,3	Listening to lectures, working on a computer, reading literature.	Understand the term business information system. Identify major groups of information systems.	8 hours
	2.	Types of information systems and components	1,2,3	Listening to lectures, working on a computer, reading literature.	Define the archive system. Identify archiving media. Identify the pros and cons of an individual archive medium. Explain the procedures for authenticating and authorizing access to business documentation. Protect digital content by encryption. Apply digital signature technology.	10 hours
	3.	Archiving and data protection	1,2,3,4	Listening to lectures, working on a computer, reading literature.	Define the levels of business automation. Identify prerequisites for business automation. Identify the role of business policy and organizational	10 hours

					procedures in business automation. Explain the importance of working conditions and ergonomics in business automation.	
	4.	Business Automation	1,2,3,4	Listening to lectures, working on a computer, reading literature.	Identify information resources in the business. Identify the types and value of information. Interpret ways of classifying, evaluating, processing, storing, exchanging and distributing data and information	10 hours
	5.	Information resource management	1,2,3,4	Listening to lectures, working on a computer, reading literature.	Define the term telecommunications and telecommunication system. Identify elements of the telecommunications system.	10 hours
	6.	Business Information Systems Communication Infrastructure	1,2,3,4	Listening to lectures, working on a computer, reading literature.	Development trends of telecommunication systems. To interpret the division of telecommunications according to the type of information, the division of telecommunication processes, the division according to forms of communication.	10 hours
	7.	Key business applications	1,2,3,4,5	Listening to lectures, working on a computer, reading literature.	Advanced use of MS Office suite of office applications.	10 hours
	8.	Electronic business and trends	1,2,3,4,5	Listening to lectures, working on a computer, reading literature.	Define the essential terms of e-commerce. Identify emerging trends in e-commerce. Use cloud services.	15 hours
	9.	Information system development	1,2,3,4	Listening to lectures, working on a computer, reading literature.	Explain stakeholder roles in information system development. Analyze the architecture of an existing information system. Identify the stages of information system development. Explain the methodology of waterfall development Explain the methodology of rapid application development Explain the methodology of information engineering Explain the methodology of the unified development process Expose the most famous agile methodologies and explain their features	15 hours
	10.	Business information system and business management	3,4,5,6	Listening to lectures, working on a computer, reading literature.	Identify layers of business information system. Model the business process as a transaction.	15 hours
	11.	Business information system support for key business functions	3,4,5,6	Listening to lectures, working on a computer, reading literature.	Identify key business functions. Use the business intelligence analysis and planning subsystem. Use the permanent business asset management information subsystem.	15 hours
	12.	Business information system and business process management	3,4,5,6	Listening to lectures, working on a computer, reading literature.	Use the human resources management information subsystem. Use the Accounting and Financial Management Information Subsystem.	15 hours

	13.	Business information system and business process management	3,4,5,6	Listening to lectures, working on a computer, reading literature.	Use the procurement information system and inbound logistics. Use the production information subsystem. Use the sales and outbound logistics information subsystem	15 hours
	14.	Strategic management of business information system	3,4,5,6	Listening to lectures, working on a computer, reading literature.	Identify information systems as drivers of operational efficiency and business innovation. Formulate goals for building an information system. Analyze the risks of implementing business information systems. Apply the concepts, measurements and evaluation (audit) of the quality of business information systems	15 hours
	15.	Business information systems and electronic commerce	3,4,5,6	Listening to lectures, working on a computer, reading literature.	Define a company environment in e-commerce. Analyze the connectivity of the business information system with e-commerce activities.	15 hours

3. EVALUATION OF STUDENT WORK

3.1. Students` obligations

In accordance with the Book of Rules and the Rulebook on Student Assessment and Evaluation: for all regular students attend at least 70% attendance. Part-time students have the obligation to attend at least 50% of lectures. All students must create, present and positively colloquy seminar paper.

Students who have during the course achieved:

- From 0 – 24,9% ECTS credits- is rated F (unsuccessful) and cannot get ECTS credits and must re-enrol the subject in the next academic year;
- From 25 – 49,9% ECTS credits - is rated FX (inadequate) and has to come out and pass the test (exam). A written exam can be held in a regular or extraordinary exam period;
- More than 50% ECTS credits - students have the right to access the final exam of the subject.

Students can take the final exam in the course in two ways: a) during the course of teaching through continuous monitoring of students (active participation in classes and exercises and two exams); b) during class (active participation in classes and exercises) and passing exams (written and oral examinations).

3.2. Monitoring student work (enter the share of ECTS credits for each activity so that the total number of ECTS points corresponds to the credit score of the course)

Attendance	2	Written exam	2 (by submitting both colloquiums the student is relieved of an written examination)	Project	
Experimental work		Research		Practical work	1
Essay		Report		Continuous examination	
Colloquium	3 (by submitting both colloquiums the student is relieved of a written and oral examination)	Seminar paper		Other (inscribe)	
Class activities		Oral exam	1 (by submitting both colloquiums the student is relieved of an oral examination)	Other (inscribe)	

3.3. Student workload

The student's workload on all bases amounts to 1 ECTS point for 30 hours of work per semester and is estimated as:

Commitment	***Hours (estimate)***

21.	Attending classes	60
22.	Practical work	30
23.	Preparation for the Colloquium / exam through self-study	90

4. GRADING

4.1. Seminar paper grading

Valuation Element	Poor	Satisfying	Above average

4.2. Colloquium / exam grading

Poor	Satisfying	Above average
Give answer by memory, no deeper understanding. Does not know and does not apply the basic terms and concepts. Cannot apply or explain the contents of the course.	Reproduces basic terms, without difficulty transfers new knowledge, understands subject matter, explains the terms and the notions that substantiate by examples.	Knowledge is at the level of analysis, synthesis and evaluation. It observes legitimacy, accurately and thoroughly explains the content of the subject, and logically links and explains the terms and concepts that it encapsulates. Find solutions that are not originally given. There is a correlation with correlative subjects.

4.3. Creating a final grade according to evaluation elements

Active participation in the lessons	70-75% of attendance	76-86% of attendance	87-100% of attendance	Created mental map. Solved case study.
	4 points	7 points	10 points	3 points
Seminar paper	2	3	4	5
	5 points	7 points	8 points	10 points
Colloquium / written exam	2	3	4	5
	50-64,9%	65-79,9%	80-89,9%	90-100%
	25 points	30 points	35 points	40 points
Oral exam	2	3	5	5
	25 points	30 points	35 points	40 points

4.4. Creating a final grade according to absolute allocation

Percentage of adopted knowledge, skills and competences (teaching + final exam)	Numerous grade	ECTS grade
90 – 100%	5 (excellent)	A
80 – 89,9%	4 (very good)	B
65 – 79,9%	3 (good)	C
60 – 64,9%	2 (sufficient)	D
50 – 59,9%	2 (sufficient)	E

5. ADDITIONAL INFORMATION ABOUT THE COURSE			
5.1. Compulsory literature (available in the library and through other media)	**Title**	**Number of copies in the library**	**Availability via other media**
	Ž.Panian, K.Čurko et al.: Poslovni informacijski sustavi, Element, 2010.	5	
5.2. Additional literature (at the moment of changes and/or amended of study programme)	Bidgoli H.: Management Information Systems6, 4LTR Press,Cengage Learning, 2016. J.O'Brien, G.Marakas: Menagement Information Systems, 7th ed., McGraw Hill, 2016.	3	Available online at e-learning system
5.3. Quality assurance methods that ensure the acquisition of knowledge, skills and competences	The control of students' work quality and the acquisition of necessary knowledge and skills will be ensured through interactive work. By keeping track of attendance and student activity during classes and provided information on students` progress through short colloquiums and homework, information for further guidance to students will be provided in order to increase the efficiency of their work. Students will be informed about their rights and obligations as well as the methods of work and the required literature. Indicators of quality assurance system: Student survey, monitoring of annual data from the Croatian employment service on the annual state of student employment, surveys from employers and Alumni association.		
5.4. information on the course and contact with the teacher	It is obligatory for every student to regularly inform about the course, teaching and teaching activities. All information about teaching or any delay in teaching will be published on the e-learning pages of the course and on the web pages of the Polytechnic. Students can contact the teachers during the consultation term (at least one hour per week), while brief questions and explanations can be addressed during classes. It is possible to ask questions by e-mail (from the official e-mail address from the domain @ vus.hr) that will be answered in a short time (no later than five working days from the receipt of e-mail).		

3. GENERAL COURSE INFORMATION			
1.1. Course title	**Operating Systems**	1.8. Course code in ISVU	201327
1.2. Course lecturer	Zvonimir Klarin	1.9. Course code in MOZVAG	
1.3. Assistants and/or associates	-	1.10. Forms of teaching (number of hours Lecturing +Practical exercises + Seminars + e learning)	(30+30+0+0)
1.4. Study program (specialist, undergraduate, graduate)	**Undergraduate Professional Study of Business Informatics**	1.11. Level of e- learning application (1st, 2nd, 3rd level), percentage of on line course performance (max. 20%)	1st, course materials are on-line, 0%
1.5. Course status (mandatory, elective)	Mandatory	1.12. Number of course revisions	2.
1.6. Year of study	2nd	1.16. Modernization	Yes
1.7. Credit score (ECTS)	6	1.14. Percentage estimate of course changes and/or supplements	Less than 20% X□ More than 20 % □

2. COURSE DESCRIPTION	
2.1. Course objectives	Gain knowledge of server operating systems. Introduction to mobile operating systems.
2.2. Terms of course entry and required competences	Completed a four-year high school education; possession of a qualification at level 4.2 according to the CROQF. The condition for access to the exam is passing the course Introduction to Operating Systems.

2.3. . Learning outcomes on the study program level	LO1: Analyze the situation, identify opportunities and anticipate the problems encountered by organizations and individuals in the application of information technologies LO11: Link the activities of building and maintaining information system with the needs of clients and users LO12: Apply key aspects of information technology (programming, algorithms, data structures, databases and project management in the field of IT) LO13: Rank security threats and select appropriate countermeasures to protect the information system	
2.4. Expected learning outcomes on the course level	**Learning outcomes** according to the Bloom`s taxonomy: (up to two verbs per LO)	**Level of LO:** *1- remembering, 2- understanding, 3- application, 4-analysis, 5-evaluation, 6-synthesis*
	14. Define and interpret basic concepts of operating systems.	1,4
	15. Apply the basic functions of operating systems.	2,4
	16. Install and configure the server OS individually.	4, 6
	17. Use and evaluate basic software.	4,5
	18. Connect security parameters and evaluate server protections.	3,5
	19. Apply and recommend tools for regular maintenance of server resources.	3,5

2.5. Course content according to detailed curriculum schedule

Constructive allignament

no	Thematic unit	LO of the course	Content/teaching methods	Evaluation	Time
91.	Introduction to the course and detailed curriculum	1	Listen to lectures. During the exercises, get acquainted with the content of the course and documents on the e-learning platform of the course.	-	4 h
92.	Linux I	1,2	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Know the basics of the Linux operating system.	4 h
93.	Linux II	1,2	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Know the basics of the Linux operating system.	4 h
94.	Linux III	1,2	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Know the basics of the Linux operating system.	4 h
95.	Linux server installation and configuration	3	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Know the capabilities of Linux server software.	8 h
96.	Configuration of Linux server services	4,5,6	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Know the basic configuration of Linux server software.	4 h
97.	Windows server I	1,2	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Know the basics of the Windows operating system.	8 h

	98.	Windows server II	1,2	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Know the basics of the Windows operating system.	4 h
	99.	Windows server III	1,2	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Know the basics of the Windows operating system.	4 h
	100.	Windows server installation and configuration	3	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Know the capabilities of Windows server software.	4 h
	101.	Configuration of Windows server services	4,5,6	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Know the basic configuration of Windows server software.	8 h
	102.	Comparison of Windows and Linux servers	1,2	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Know the differences between server operating systems.	4 h
	103.	iOS, OSX	1,2	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Know the basics of iOS and OSX operating systems.	8 h
	104.	Android	1,2	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Know the basics of the Android operating system.	8 h
	105.	Concluding remarks and preparation for the exam	1,2	Listen to lectures and prepare for the exam individually.		100 h

3. EVALUATION OF STUDENTS` WORK

3.1. Students` obligations

In accordance with the Regulations on Studying and the Regulations on Student Assessment and Evaluation: for all full-time students attendance of at least 70%. Part-time students are required to attend classes at least 50%.
Students who have during the course achieved:

- from 0 - 24,9% ECTS credits- are rated F (unsuccessful) and cannot obtain ECTS credits, and must re-enroll in the next academic year;
- from 25 - 49,9% - are assessed by FX (insufficient) and must pass the written exam (test). Written exam (test) can be held in a regular or extraordinary exam period;
- more than 50% - students have the right to take the final exam.

Students can take the final exam from the course in two ways: a) during the course of teaching through continuous monitoring of students (active participation in classes); b) by passing the exam (written and oral part of the exam).

3.2. Monitoring student work (enter the share of ECTS credits for each activity so that the total number of ECTS points corresponds to the credit score of the course))

Attendance	1	Written exam	2	Project	
Experimental work		Research		Practical work	
Essay		Report		Continuous examination	1
Colloquium		Seminar paper		Other	
Class activity	1	Oral exam	2	Other	

3.3. . Student workload

Student workload on all bases for 1 ECTS credit is 30 hours in a semester and is estimated as:

1. Attending classes and exercises 60 hours
2. Preparing colloquia or exams through individual work 120 hours

4. FORMIRANJE OCJENE

4.1. Grading seminar papers

-

4.2. Grading colloquia/ written and oral exam

Unsatisfactory	Satisfactory	Above average
Responds by memory, without a deeper understanding. Does not know or apply basic terms and concepts. Does not know how to apply or explain the contents of the course with examples.	Reproduces the basic concepts and without difficulty imparts new knowledge, understands the material, explains the terms and concepts supported with examples.	Knowledge is at the level of analysis, synthesis and evaluation. Observes the principles, accurately and thoroughly explains the content of the material, and logically connects and explains the terms and concepts supported with examples. Finds solutions that were not originally given. Notes correlations with related material.

4.3. Final grade according to evaluation elements

Active course attendance	70-74,9% of attendance	75-79,9% of attendance	80-89,9% of attendance	90-100% of attendance
	2 points	5 points	10 points	20 points
Colloquia/ Written exam	2	3	4	5
	50-64,9%	65-79,9%	80-89,9%	90-100%
	25 points	30 points	35 points	40 points
Oral exam	2	3	5	5
	25 points	30 points	35 points	40 points

4.4. Final grade according to absolute division

Percentage of acquired knowledge, skills and competences (teaching + final exam)	Numerical grade	ECTS grade
90 – 100%	5 (excellent)	A
80 – 89,9%	4 (very good)	B
65 – 79,9%	3 (good)	C
60 – 64,9%	2 (satisfactory)	D
50 – 59,9%	2 (satisfactory)	E

5. ADDITIONAL COURSE INFORMATION

5.1. Compulsory literature (available in the library and via other media)

Title	Number of copies in the library	Availability via other media
6. Cvitušić, Goran: Osnove korištenja operacijskog sustava Linux 7. Microdsoft: Windows Server 2019		Available on the e-learning page of the course

5.2. Additional literature (at the moment of changes and/or amended of study program)	7. Android Developer Guide 8. IOS for iPhone 9. OSX inside		Available on the e-learning page of the course
5.3. Quality assurance methods that ensure the acquisition of knowledge, skills and competences	The control of students' work quality and the acquisition of necessary knowledge and skills will be ensured through interactive work. By keeping track of attendance and student activity during classes and provided information on students` progress through short colloquiums and homework, information for further guidance to students will be provided in order to increase the efficiency of their work. Students will be informed about their rights and obligations as well as the methods of work and the required literature. Indicators of quality assurance system: Student survey, monitoring of annual data from the Croatian employment service on the annual state of student employment, surveys from employers and Alumni association.		
5.4. Informing about the course and contacting the teacher	It is the responsibility of each student to be regularly informed about the course, the coursework, and the classroom activities. All notices of classes or possible adjournment will be published in a timely manner on the e-learning site of the course and on the website of the Polytechnic. Students can contact teachers during the consultation period (at least one hour per week), while for short questions and explanations they can be contacted during class. It is also possible to ask questions by e-mail (from the official e-mail address at @ vus.hr), which will be answered as soon as possible (no later than five working days after receiving the e-mail).		

· GENERAL INFORMATION			
1.1. Course lecturer	Ivan Livaja	1.8. Course code in ISVU	201328
1.2. Course title	**Databases**	1.9. Course code in MOZVAG	
1.3. Assistants and/or associates	Zvonimir Klarin	1.10. Forms of teaching (number of hours Lecturing +Practical exercises + Seminars + e learning)	(30+45+0+0)
1.4. Study programme (specialist, undergraduate, graduate)	**Professional Undergraduate Study of Business Informatics**	1.11. Level of e- learning application (1st, 2nd, 3rd level), percentage of on line course performance (max. 20%)	1st, course materials are on-line, 0%
1.5. Course status (mandatory, elective)	Mandatory	1.12. Number of course revisions	2
1.6. Year of study	2nd	1.17.Modernization	Yes
1.7. Credit score (ECTS)	6	1.14. Percentage estimate of course changes and/or supplements	Less than 20% X□ More than 20 % □

2. COURSE DESCRIPTION	
2.1. Course objectives	• Understanding database development in business process shaping • Adopting and expanding knowledge in the field through: - Relational Database Design - Database Management - Logical and physical formatting of databases - Conceptual model and normalization - Creating applications • Management and maintenance of the database
2.2. Terms of course entry and required competences	4 year secondary education completed; qualification level 4.2 according to the CROQF.
2.3. Learning outcomes on the study programme level	LO1: To analyze the situation, identify opportunities and anticipate problems faced by organizations and individuals in the application of information technologies LO3: Evaluate database design according to business requirements LO9: Select appropriate professional literature in Croatian and foreign language, prepare and independently present presentations in Croatian and foreign language to expert and general audiences, and critically evaluate the presented professional topics LO11: To relate the activities of building and maintaining the information system with the needs of the client and the user LO12: Apply key aspects of information technology (programming, algorithms, data structures, databases and project management in the field of IT)

	LO17: Conclude what are the basic principles and methods of quality project management and work successfully in a team

2.4. Expected learning outcomes on the course level

Learning outcomes accroding to the Bloom`s taxonomy: (up to two verbs per LO)	**Level of LO:** *1- remembering, 2- understanding, 3- application, 4-analysis, 5-evaluation, 6-synthesis*
1. Classify and explain common features, similarities and differences between current and relevant information and communication technologies, and database structures and organizations	1, 4
2. Implement database implementation procedures	2, 4
3. Describe and make a diagram of the relational scheme of simpler databases	3
4. Propose and argue proposals for the application of databases	1, 4
5. Present the acquired knowledge, ideas, problems and solutions independently and in a team.	5, 6
6. Successfully implement and develop a logical, relational and physical database model. Design and describe a normalized database. Create and optimize database.	3, 5

2.5. Course content according to detailed curriculum schedule

Constructive allignement

no	**Thematic unit**	**LO of the course**	**Content/teaching methods**	**Evaluation**	**Time**
1	Relational database management system (DMBS)	-	Listen to lectures. Work independently on computer, get to know course content and elearning documents.	-	10 h
2.	Relational database, Object relational database, Temporal database, Object oriented database.	2, 3	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the midterm or the written / oral exam define the basic concepts of databases.	8 h
3.	Relational database, Object relational database, Temporal database, Object oriented database.	15	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the midterm or the written / oral exam define the basic concepts of databases.	14 h
4.	Reational model and data normalization	16, 19	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the midterm or the written / oral exam define the basic concepts of databases. They are analyze databases.	14 h
5.	Reational model and data normalization	3, 15, 16, 19	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the midterm or the written / oral exam define the basic concepts of databases. Analyze and apply data normalization and relational model.	14 h
6.	Functional dependencies in databases	3, 15, 16, 19	Write the colloquium.	-	14 h
7.	Referential integrity, Entity integrity, Foreign key	3, 15, 16, 19	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the midterm or the written / oral exam define the basic concepts of databases. They model the data by using E-R models.	12 h

	8.	Referential integrity, Entity integrity, Foreign key	3, 15, 16, 19	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the midterm or the written / oral exam define the basic concepts of databases. They model the data by using E-R models.	14 h	
	9.	Construction of E-R diagrams based on specification requirements	3, 15, 16, 19	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the midterm or the written / oral exam define the basic concepts of databases. They create a database and make changes to the data within it.	10 h	
	10.	Relational database management system	3, 15, 16, 19	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the midterm or the written / oral exam, they can define and use development environments for working with databases.	10 h	
	11.	Implementation of the database based on the diagram.	3, 15, 16, 19	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the midterm or the written / oral exam, they can define and use development environments for working with databases.	10 h	
	12.	Implementation of the database based on the diagram.	3, 15, 16, 19	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the midterm or the written / oral exam, they can define and use development environments for working with databases.	12 h	
	13.	Building Forms (WEB Interfaces) to Work with an Implemented Database	3, 15, 16, 19	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the midterm or the written / oral exam, they can define and use development environments for working with databases.	14 h	
	14.	Building Forms (WEB Interfaces) to Work with an Implemented Database	3, 15, 16, 19	Write the colloquium.	-	15 h	
	15.	Defense and presentation project, recurrence of colloquia		Listen to lectures and read literature.	-	15 h	

3. EVALUATION OF STUDENTS` WORK	
3.1. Students` obligations	In accordance with the Regulations on Studying and the Regulations onStudentAssessment and Evaluation: for all full-time students attendance of at least 70%. Part-time students are required to attend classes at least50%.All students are required to carry calculator and formulae list. Students who have during the course achieved: • from 0 - 24,9% ECTS credits- are rated F (unsuccessful) and cannot obtain ECTS credits, and must re-enroll in the next academic year; • from 25 - 49,9% - are assessed by FX (insufficient) and must pass the written exam (test). Written exam (test) can be held in a regular or extraordinary exam period; • more than 50% - students have the right to take the final exam. Students cantake the final exam from the course in two ways: a) during the course ofteaching through continuous monitoring of students (active participationin classes and through two colloquia); b) by passing the exam (writtenand oralpart of the exam).

3.2. Monitoring student work (enter the share of ECTS credits for each activity so that the total number of ECTS points corresponds to the credit score of the course)	Attendance	2,0	Written exam	3,0 (without colloquia)	Project	
	Experimental work		Research		Practical work	0,5
	Essay		Report		Continuous examination	
	Colloquium	3,0 (without written exam)	Seminar paper		Other	
	Class activity		Oral exam	0,5	Other	
3.3. Student workload	Student workload on all bases for 1 ECTS credit is 30 hours in a semester and is estimated as: 4. Attending classes and exercises 75 hours 5. Preparing colloquia or exams through individual work 105 hours					
4. GRADING SYSTEM						
4.1. Grading seminar papers						

4.2. Grading colloquia/ written and oral exam

Unsatisfactory	**Satisfactory**	**Above average**
Responds by memory, without a deeper understanding. Does not know or apply basic terms and concepts. Does not know how to apply or explain the contents of the course with examples.	Reproduces the basic concepts and without difficulty imparts new knowledge, understands the material, explains the terms and concepts supported with examples.	Knowledge is at the level of analysis, synthesis and evaluation. Observes the principles, accurately and thoroughly explains the content of the material, and logically connects and explains the terms and concepts supported with examples. Finds solutions that were not originally given. Notes correlations with related material.

4.3. Final grade according to evaluation elements

Active course attendance	70-74,9% of attendance	75-79,9% of attendance	80-89,9% of attendance	90-100% of attendance
	2 points	5 points	10 points	20 points
Colloquia/ Written exam	2	3	4	5
	50-64,9%	65-79,9%	80-89,9%	90-100%
	25 points	30 points	35 points	40 points
Oral exam	2	3	5	5
	25 points	30 points	35 points	40 points

4.3. Final grade according to absolute division		Percentage of acquired knowledge, skills and competences (teaching + final exam)	Numerical grade	ECTS grade
		90 – 100%	5 (excellent)	A
		80 – 89,9%	4 (very good)	B
		65 – 79,9%	3 (good)	C
		60 – 64,9%	2 (satisfactory)	D
		50 – 59,9%	2 (satisfactory)	E

5. ADDITIONAL COURSE INFORMATION

	Title	Number of copies in the library	Availability via other media
5.1. Compulsory literature (available in the library and via other media)	An Introduction to Database Systems, 8th Edition; C.J. Date; Addison Wesley	7	
		5	
5.2. Additional literature (at the moment of changes and/or amended of study programme)	Teaching material and exercises		
	A First Course in Database Systems; J. D. Ullman, J. Widom; Prentice-Hall; 2007; ISBN: 9780136006374		
	Database Systems: A Practical Approach to Design, Implementation, and Management; T. M. Connolly, C. E. Begg; Addison Wesley; 2004		
5.3. Quality assurance methods that ensure the acquisition of knowledge, skills and competences	The control of students' work quality and the acquisition of necessary knowledge and skills will be ensured through interactive work. By keeping track of attendance and student activity during classes and provided information on students` progress through short colloquiums and homework, information for further guidance to students will be provided in order to increase the efficiency of their work. Students will be informed about their rights and obligations as well as the methods of work and the required literature. Indicators of quality assurance system: Student survey, monitoring of annual data from the Croatian employment service on the annual state of student employment, surveys from employers and Alumni association.		
5.4. Informing about the course and contacting the teacher	It is the responsibility of each student to be regularly informed about the course, the coursework, and the classroom activities. All notices of classes or possible adjournment will be published in a timely manner on the e-learning site of the course and on the website of the Polytechnic. Students can contact teachers during the consultation period (at least one hour per week), while for short questions and explanations they can be contacted during class. It is also possible to ask questions by e-mail (from the official e-mail address at @ vus.hr), which will be answered as soon as possible (no later than five working days after receiving the e-mail).		

V. SEMESTER

1. GENERAL INFORMATION ABOUT THE SUBJECT			
1.1. Title	**Information Systems Analysis and Design**	1.8. ISVU course code	146379
1.2. Lecturer	Frane Urem PhD prof	1.9. MOZVAG course code	
1.3. Assistants and/or associates		1.10. Forms of teaching (number of hours Lecturing +Practical exercises + Seminars + e learning)	(30+30+0+0)
1.4. Study programme (specialist, undergraduate, graduate)	undergraduate	1.11. Level of e- learning application (1st, 2nd, 3rd level), percentage of on line course performance (max. 20%)	3rd – materials available On-line, 0%
1.5. Course status (mandatory, elective)	mandatory	1.12. Number of course revisions	1.
1.6. Study year	3rd	1.13. Modernization	■ yes □ no
1.7. Credit score (ECTS)	6	1.14. Percentage estimate of course changes and/or supplements	Less than 20% ■ More than 20 % □
2. COURSE DESCRIPTION			
2.1. Course objectives	Acquiring knowledge in logical design and analysis of information systems (IS). To equip students for independent and team work in the application, methodology, methods and techniques of designing information systems for business organizational systems. By acquiring and using course knowledge, students will understand that there is no realization of a real and complex information system without a detailed analysis and preparation of a documented project of the information system on the basis of which the development (physical realization) of the IS is carried out.		

2.2. Terms of course entry and required competences	Four-year high school education completed; having a qualification at level 4.2	
2.3. Learning outcomes on the study programme level	IU9 Select appropriate professional literature in Croatian and foreign languages, prepare and independently deliver presentations in Croatian and foreign languages to expert and general audiences, and critically evaluate the presented professional topics	
	IU12. Apply key aspects of information technology (programming, algorithms, data structures, databases and project management in the field of information technology)	
	IU15. Compare and select appropriate development tools at expert level	
	IU17. Conclude what are the basic principles and methods of quality project management and work successfully in a team	
2.4. Expected learning outcomes on the course level	**Learning outcomes** towards Bloom's taxonomy: (up to two verbs per LO)	**LO Level:** *37. Recapture,* *38. Understanding,* *39. Application,* *40. Analysis,* *41. Evaluation,* *42. Synthesis*
	1. Conduct business analysis in a real system in order to obtain the necessary information about the current state of IS	3, 4, 5, 6
	2. Break down business functions into elemental processes - perform functional decomposition of a real system	2, 3, 4, 6
	3. Demonstrate business processes	2, 3, 4, 6
	4. Describe data flows and data repositories	2, 3, 4, 6
	5. Create a conceptual data model	2, 3, 4, 6
	6. Translate the conceptual data model into a relational data model.	2, 3, 4, 6
	7. Develop algorithms for obtaining the most important information from the set relational data model	2, 3, 4, 6
	8. Select IT technology resources according to the IS project created	2, 3, 4, 6
	9. Estimate the cost of a new (engineered) IS	2, 3, 4, 6

2.5. Course content according to detailed curriculum schedule

Constructive alignment

No:	Thematic ensemble / Lecture Topic	Course LO	Content / Teaching Method	Evaluation	Time needed
1.	Introduction to the course and detailed curriculum.	-			2 hours
	Basic terms	1,2,3	Listening to lectures, working on a computer, reading literature.	Basic terms	8 hours
2.	Information system	1,2,3	Listening to lectures, working on a computer, reading literature.	Describe key stakeholders in building and using an information system Analyze business needs in building and using an information system Identify the impact of technological development on the construction and use of information systems	10 hours

	3.	Information system	1,2,3	Listening to lectures, working on a computer, reading literature.	Interpret a simplified description of information system development Expose different views of stakeholders on parts of the information system	10 hours
	4.	Basics of information systems development methodologies	1,2,3,4	Listening to lectures, working on a computer, reading literature.	Explain Capability Maturity Model for evaluating development quality Identify basic principles in the development of information systems Interpret more important methodologies for developing information systems	10 hours
	5.	Basics of information systems development methodologies	1,2,3,4	Listening to lectures, working on a computer, reading literature.	Explain the methodology of waterfall development Explain the methodology of rapid application development Explain the methodology of information engineering Explain the methodology of the unified development process Expose the most famous agile methodologies and explain their features	10 hours
	6.	Project management	1,2,3,4,5,9	Listening to lectures, working on a computer, reading literature.	Analyze project success Identify competencies of project managers	10 hours
	7.	Project management	1,2,3,4,5,9	Listening to lectures, working on a computer, reading literature.	Identify core project management functions Apply project management methods	10 hours
	8.	System Analysis	1,2,3,4,5,6,9	Listening to lectures, working on a computer, reading literature.	Collect information from stakeholders of the information system and identify project requirements Apply requirements determination processes to the system and fact-finding techniques Review existing documentation, forms and database Perform a work environment observation Design questionnaires Interviewing Analyze and model data Identify entities, attributes, keys, connections, foreign keys Apply ERD tagging Use logical matrices in modeling the connections between entities	15 hours
	9.	System Analysis	1,2,3,4,5,6,9	Listening to lectures, working on a computer, reading literature.	Identify special forms of connections: non-specific links, redundant links, recursive links Perform data normalization Use CASE tools in data modeling Model processes Perform system decomposition Develop a data flow model	15 hours

	10.	System Analysis	1,2,3,4,5,6,9	Listening to lectures, working on a computer, reading literature.	Interpret the basic settings of object-oriented analysis Design classes and objects Design methods and messages between objects Apply encapsulation and hide information Analyze inheritance Apply polymorphism Develop class and object diagrams Develop component and layout diagrams Make use cases Develop activity diagrams Develop interaction diagrams Develop state diagrams Analyze the feasibility and cost-benefits of system enhancements (operational feasibility, technical and technological feasibility, time feasibility, economic feasibility)	15 hours
	11.	System Design	5,6,7,8,9	Listening to lectures, working on a computer, reading literature.	Develop your own simple information system solution Analyze procurement of ready-made solutions Identify business management systems To substantiate the decision to procure the finished solution Select the appropriate system architecture	15 hours
	12.	System Design	5,6,7,8,9,10	Listening to lectures, working on a computer, reading literature.	Describe distributed systems Explain architectures with clients and servers Explain network architectures Explain web architecture	15 hours
	13.	System Design	5,6,7,8,9,10	Listening to lectures, working on a computer, reading literature.	Explain service oriented architectures Design information system security architecture Design a database Design a user interface	15 hours
	14.	System design, implementation and maintenance	5,6,7,8,9,10	Listening to lectures, working on a computer, reading literature.	Apply standards and recommendations in programming Generate part of the code according to the default specification	15 hours
	15.	System design, implementation and maintenance	5,6,7,8,9,10	Listening to lectures, working on a computer, reading literature.	Check the correctness of the created program code Provide user documentation and documentation for system maintenance	15 hours

3. EVALUATION OF STUDENT WORK	
3.1. Students` obligations	In accordance with the Book of Rules and the Rulebook on Student Assessment and Evaluation: for all regular students attend at least 70% attendance. Part-time students have the obligation to attend at least 50% of lectures. All students must create, present and positively colloquy seminar paper. Students who have during the course achieved: • From 0 – 24,9% ECTS credits- is rated F (unsuccessful) and cannot get ECTS credits and must re-enrol the subject in the next academic year; • From 25 – 49,9% ECTS credits - is rated FX (inadequate) and has to come out and pass the test (exam). A written exam can be held in a regular or extraordinary exam period;

	• More than 50% ECTS credits - students have the right to access the final exam of the subject. Students can take the final exam in the course in two ways: a) during the course of teaching through continuous monitoring of students (active participation in classes and exercises and two exams); b) during class (active participation in classes and exercises) and passing exams (written and oral examinations).

3.2. Monitoring student work (enter the share of ECTS credits for each activity so that the total number of ECTS points corresponds to the credit score of the course)						
	Attendance	2	Written exam	2 (by submitting both colloquiums the student is relieved of an written examination)	Project	
	Experimental work		Research		Practical work	1
	Essay		Report		Continuous examination	
	Colloquium	3 (by submitting both colloquiums the student is relieved of a written and oral examination)	Seminar paper		Other (inscribe)	
	Class activities		Oral exam	1 (by submitting both colloquiums the student is relieved of an oral examination)	Other (inscribe)	

3.3. Student workload

The student's workload on all bases amounts to 1 ECTS point for 30 hours of work per semester and is estimated as:

Commitment	***Hours (estimate)***
24. Attending classes	60
25. Practical work	30
26. Preparation for the Colloquium / exam through self-study	90

4. GRADING

4.1. Seminar paper grading

Valuation Element	**Poor**	**Satisfying**	**Above average**

4.2. Colloquium / exam grading

Poor	**Satisfying**	**Above average**
Give answer by memory, no deeper understanding. Does not know and does not apply the basic terms	Reproduces basic terms, without difficulty transfers new knowledge, understands subject matter, explains	Knowledge is at the level of analysis, synthesis and evaluation. It observes legitimacy, accurately and thoroughly explains the content of the subject, and

	and concepts. Cannot apply or explain the contents of the course.	the terms and the notions that substantiate by examples.	logically links and explains the terms and concepts that it encapsulates. Find solutions that are not originally given. There is a correlation with correlative subjects.

4.3. Creating a final grade according to evaluation elements

Active participation in the lessons	70-75% of attendance	76-86% of attendance	87-100% of attendance	Created mental map. Solved case study.
	4 points	7 points	10 points	3 points
Seminar paper	2	3	4	5
	5 points	7 points	8 points	10 points
Colloquium / written exam	2	3	4	5
	50-64,9%	65-79,9%	80-89,9%	90-100%
	25 points	30 points	35 points	40 points
Oral exam	2	3	5	5
	25 points	30 points	35 points	40 points

4.4. Creating a final grade according to absolute allocation

Percentage of adopted knowledge, skills and competences (teaching + final exam)	Numerous grade	ECTS grade
90 – 100%	5 (excellent)	A
80 – 89,9%	4 (very good)	B
65 – 79,9%	3 (good)	C
60 – 64,9%	2 (sufficient)	D
50 – 59,9%	2 (sufficient)	E

5. ADDITIONAL INFORMATION ABOUT THE COURSE

	Title	Number of copies in the library	Availability via other media
5.1. Compulsory literature (available in the library and through other media)	F. Urem, Projektiranje i analiza IS-a, Veleučilište u Šibeniku, 2016., ISBN: 978-953-7566-30-2		Available online at e-learning system
5.2. Additional literature (at the moment of changes and/or amended of study programme)	J. A. Hoffer, J. F. George, J. S. Valacich: Modern Systems Analysis and Design, 3/e, Prentice Hall College Div, 2001. Eeles, P.; O. Sims, Building Business Objects. John Wiley & Sons, 1998.	3	Available online at e-learning system

5.3. Quality assurance methods that ensure the acquisition of knowledge, skills and competences	The control of students' work quality and the acquisition of necessary knowledge and skills will be ensured through interactive work. By keeping track of attendance and student activity during classes and provided information on students` progress through short colloquiums and homework, information for further guidance to students will be provided in order to increase the efficiency of their work. Students will be informed about their rights and obligations as well as the methods of work and the required literature. Indicators of quality assurance system: Student survey, monitoring of annual data from the Croatian employment service on the annual state of student employment, surveys from employers and Alumni association.
5.4. information on the course and contact with the teacher	It is obligatory for every student to regularly inform about the course, teaching and teaching activities. All information about teaching or any delay in teaching will be published on the e-learning pages of the course and on the web pages of the Polytechnic. Students can contact the teachers during the consultation term (at least one hour per week), while brief questions and explanations can be addressed during classes. It is possible to ask questions by e-mail (from the official e-mail address from the domain @ vus.hr) that will be answered in a short time (no later than five working days from the receipt of e-mail).

· GENERAL INFORMATION			
1.1. Course lecturer	Ivan Livaja	1.8. Course code in ISVU	146372
1.2. Course title	**Management of Information Services**	1.9. Course code in MOZVAG	
1.3. Assistants and/or associates	Zvonimir Klarin	1.10. Forms of teaching (number of hours Lecturing +Practical exercises + Seminars + e learning)	(30+30+0+0)
1.4. Study programme (specialist, undergraduate, graduate)	**Undergraduate Professional Study of Business Informatics**	1.11. Level of e- learning application (1st, 2nd, 3rd level), percentage of on line course performance (max. 20%)	1st, course materials are on-line, 0%
1.5. Course status (mandatory, elective)	Mandatory	1.12. Number of course revisions	2
1.6. Year of study	3st	1.18.Modernization	Yes
1.7. Credit score (ECTS)	4	1.14. Percentage estimate of course changes and/or supplements	Less than 20% X□ More than 20 % □
2. COURSE DESCRIPTION			
2.1. Course objectives	- Getting to know the area of information services and trends - Adopting and expanding knowledge for the area through: Professional Provision of Services Development of service development strategy Forming a service Management of services Supervising delivery and quality of service - The aim of the course is to introduce students to the information services strategy in order to shape and deliver new services so they can independently participate in the development and implementation of new services.		
2.2. Terms of course entry and required competences	4 year secondary education completed; qualification level 4.2 according to the CROQF.		
2.3. Learning outcomes on the study programme level	LO1: To analyze the situation, identify opportunities and anticipate the problems encountered by organizations and individuals in the application of information technologies LO3: Evaluate database design according to business requirements LO8: Select and apply basic principles of planning and career development in the profession and their own entrepreneurial ventures LO9: Select appropriate professional literature in Croatian and foreign language, prepare and independently present presentations in Croatian and foreign language to expert and general audiences, and critically evaluate the presented professional topics		

	LO16: Valorize the important factors that affect the business of the organization and individuals, and apply the basic methods and concepts of planning, management and accounting of business LO17: Conclude what are the basic principles and methods of quality project management and work successfully in a team

2.4. Expected learning outcomes on the course level

Learning outcomes accroding to the Bloom`s taxonomy: (up to two verbs per LO)	**Level of LO:** *1- remembering, 2- understanding, 3- application, 4-analysis, 5-evaluation, 6-synthesis*
1. Apply standards / methods / recommendations for managing information services.	3, 1
2. Explain the basic concepts used in managing information services.	1
3. Describe both the state and trends of the development of modern information and communication technologies	4
4. To propose to the users the implementation of appropriate world recommendations and standards.	5
5. Present the acquired knowledge, ideas, problems and solutions independently and in a team.	6
6. Apply ethical principles, regulations and standards applicable to the profession	3

2.5. Course content according to detailed curriculum schedule

Constructive allignement

no	**Thematic unit**	**LO of the course**	**Content/teaching methods**	**Evaluation**	**Time**
1	Definition of a service; Role of services in the society	-	Listen to lectures. Work independently on computer, get to know course content and elearning documents.	-	10 h
2.	Areas of providing services and service customers	1, 2, 3	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the midterm or the written / oral exam, they define the basic concepts of services.	6 h
3.	Market of informatics services history, trends	1, 13	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the midterm or the written / oral exam, they define the basic concepts of service delivery	7 h
4.	Growth and globalization of services; Service strategies, price markets	1, 3, 13	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	In the midterm or the written / oral exam, they define the markets for IT services	7 h
5.	Services Provided by Technology, E-Services	1, 2, 3, 13, 14	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the colloquium or the written / oral exam they can define professional ethics and standards. Practical work created and presented (using computer programs and sources of information and communication technologies independently).	7 h
6.	Development of new service. Quality service planning	1, 2, 3, 13, 14	Write the colloquium.	-	8 h
7.	Planning and management of projects and	1, 2, 3, 13, 14	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the colloquium or the written / oral exam they can define professional ethics and standards. Practical work created and presented (using	8 h

				computer programs and sources of information and communication technologies independently).		
8.	Professional ethics; Licensing, certifying and accrediting; Norms;	1, 2, 3, 13, 14	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the colloquium or the written / oral exam they can define professional ethics and standards. Practical work created and presented (using computer programs and sources of information and communication technologies independently).	8 h	
9.	Investment proposal and feasibility study	1, 2, 3, 13, 14	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the midterm or the written / oral exam, they can define the investment eleaborate and the feasibility study. Practical work created and presented (using computer programs and sources of information and communication technologies independently).	8 h	
10.	Service management; Market management supply and demand	1, 2, 3, 13, 14	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the midterm or the written / oral exam, they can define the investment eleaborate and the feasibility study. Practical work created and presented (using computer programs and sources of information and communication technologies independently).	8 h	
11.	Service quality supervision and control; Support functions	1, 2, 3, 13, 14	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the midterm or the written / oral exam, they can define the investment eleaborate and the feasibility study. Practical work created and presented (using computer programs and sources of information and communication technologies independently).	9 h	
12.	Offer requirement and competition documentation; Calculation and service offering; Forms of contract relationship; Service contract s and fulfilment of service obligations; Supervision, reporting and communication	1, 2, 3, 13, 14	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the midterm or the written / oral exam, they can define the investment eleaborate and the feasibility study. Practical work created and presented (using computer programs and sources of information and communication technologies independently).	9 h	
13.	IT finance management	1, 2, 3, 13, 14	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the midterm or the written / oral exam, they can define the investment eleaborate and the feasibility study. Practical work created and presented (using computer programs and sources of information and communication technologies independently)..	9 h	
14.	Defense and presentation of the seminar	1, 2, 3, 13, 14	Write the colloquium.	-	9 h	
15.	Defense and presentation of the seminar, recurrence of colloquia		Listen to lectures and read literature.	-	9 h	

3. EVALUATION OF STUDENTS` WORK

3.1. Students` obligations	In accordance with the Regulations on Studying and the Regulations on StudentAssessment and Evaluation: for all full-time students attendance of at least 70%. Part-time students are required to attend classes at least50%.All students are required to carry calculator and formulae list. Students who have during the course achieved: • from 0 - 24,9% ECTS credits- are rated F (unsuccessful) and cannot obtain ECTS credits, and must re-enroll in the next academic year; • from 25 - 49,9% - are assessed by FX (insufficient) and must pass the written exam (test). Written exam (test) can be held in a regular or extraordinary exam period; • more than 50% - students have the right to take the final exam. Students cantake the final exam from the course in two ways: a) during the course ofteaching through continuous monitoring of students (active participationin classes and through two colloquia); b) by passing the exam (writtenand oralpart of the exam).

3.2. Monitoring student work (enter the share of ECTS credits for each activity so that the total number of ECTS points corresponds to the credit score of the course)						
	Attendance	1,0	Written exam	1,5 (without colloquia)	Project	
	Experimental work		Research		Practical work	
	Essay		Report		Continuous examination	
	Colloquium	1,5 (without written exam)	Seminar paper	1,0	Other	
	Class activity		Oral exam	0,5	Other	

3.3. Student workload	Student workload on all bases for 1 ECTS credit is 30 hours in a semester and is estimated as: 1. Attending classes and exercises 60 hours 2. Preparing colloquia or exams through individual work 60 hours

4. GRADING SYSTEM

4.1. Grading seminar papers	

4.2. Grading colloquia/ written and oral exam

Unsatisfactory	Satisfactory	Above average
Responds by memory, without a deeper understanding. Does not know or apply basic terms and concepts. Does not know how to apply or explain the contents of the course with examples.	Reproduces the basic concepts and without difficulty imparts new knowledge, understands the material, explains the terms and concepts supported with examples.	Knowledge is at the level of analysis, synthesis and evaluation. Observes the principles, accurately and thoroughly explains the content of the material, and logically connects and explains the terms and concepts supported with examples. Finds solutions that were not originally given. Notes correlations with related material.

4.3. Final grade according to evaluation elements	Active course attendance	70-74,9% of attendance	75-79,9% of attendance	80-89,9% of attendance	90-100% of attendance
		2 points	5 points	10 points	20 points
	Colloquia/ Written exam	2	3	4	5
		50-64,9%	65-79,9%	80-89,9%	90-100%
		25 points	30 points	35 points	40 points
	Oral exam	2	3	5	5
		25 points	30 points	35 points	40 points

4.3. Final grade according to absolute division

Percentage of acquired knowledge, skills and competences (teaching + final exam)	Numerical grade	ECTS grade
90 – 100%	5 (excellent)	A
80 – 89,9%	4 (very good)	B
65 – 79,9%	3 (good)	C
60 – 64,9%	2 (satisfactory)	D
50 – 59,9%	2 (satisfactory)	E

5. ADDITIONAL COURSE INFORMATION

	Title	Number of copies in the library	Availability via other media
5.1. Compulsory literature (available in the library and via other media)	Fitzsimmons, J.A.; Fitzsimmons, M.J. Service Management: Operations, Strategy, and Information Technology. 5th Ed., Irwin/McGraw-Hill, Homewood, IL, 2006.		
5.2. Additional literature (at the moment of changes and/or amended of study programme)	Teaching material and exercises .IT Infrastructure Library, Office of Government Commerce and IT Service Management Forum http://www.itil.co.uk 2. SFIA – The Skills Framework for the Information Age, http://www.sfia.org.uk/		
5.3. Quality assurance methods that ensure the acquisition of knowledge, skills and competences	The control of students' work quality and the acquisition of necessary knowledge and skills will be ensured through interactive work. By keeping track of attendance and student activity during classes and provided information on students` progress through short colloquiums and homework, information for further guidance to students will be provided in order to increase the efficiency of their work. Students will be informed about their rights and obligations as well as the methods of work and the required literature. Indicators of quality assurance system: Student survey, monitoring of annual data from the Croatian employment service on the annual state of student employment, surveys from employers and Alumni association.		
5.4. Informing about the course and contacting the teacher	It is the responsibility of each student to be regularly informed about the course, the coursework, and the classroom activities. All notices of classes or possible adjournment will be published in a timely manner on the e-learning site of the course and on the website of the Polytechnic. Students can contact teachers during the consultation period (at least one hour per week), while for short questions and explanations they can be contacted during class. It is also possible to ask questions by e-mail (from the official e-mail address at @ vus.hr), which will be answered as soon as possible (no later than five working days after receiving the e-mail).		

1. GENERAL INFORMATION			
1.1. Course lecturer	Ivan Livaja	1.8. Course code in ISVU	187581
1.2. Course title	**Protection and Security of Information Systems**	1.9. Course code in MOZVAG	
1.3. Assistants and/or associates		1.10. Forms of teaching (number of hours Lecturing +Practical exercises + Seminars + e learning)	(30+30+0+0)
1.4. Study programme (specialist, undergraduate, graduate)	Undergraduate Professional Study Business informatics	1.11. Level of e- learning application (1st, 2nd, 3rd level), percentage of on line course performance (max. 20%)	1st, course materials are on-line, 0%
1.5. Course status (mandatory, elective)	Elective	1.12. Number of course revisions	2
1.6. Year of study	3rd	1.19.Modernization	Yes
1.7. Credit score (ECTS)	4	1.14. Percentage estimate of course changes and/or supplements	Less than 20% X□ More than 20 % □

2. COURSE DESCRIPTION		
2.1. Course objectives	To individually and responsibly search relevant literature for reaching solutions and conclusions in Croatian and foreign languages To recognize and rank security threats, as well as to select and apply appropriate countermeasures to protect the information system To interpret mechanisms for the control of: data flow, errors and fragmentation, data transfer multiplexing methods using routing methods in computer networks; as well as to configure and maintain active network devices	
2.2. Terms of course entry and required competences	4 year secondary education completed; qualification level 4.2 according to the CROQF.	
2.3. Learning outcomes on the study programme level	LO2: to define and evaluate process of thinking, planning, decision making and management in terms of electronically supported business and product	ion
	LO3: to define and evaluate process of thinking, planning, decision making and management in terms of electronically supported business and product	io
	LO16: to valorize elevant factors that affect organization`s and individual`s business and apply basic methods and concepts of planning, management	and ac
	LO17: to conclude what the basic principles and methods of good project management are and work successfully in a team	
2.4. Expected learning outcomes on the course level	**Learning outcomes** accroding to the Bloom`s taxonomy: (up to two verbs per LO)	**Level of LO:** *1- remembering,* *2- understanding,* *3- application,*

		4- analysis, 5- evaluation, 6-synthesis
	1. Assess information security risks	2, 4
	2. Apply information system security procedures	3
	3. Describe the proposed security system solution	1, 4
	4. Propose and argue proposals for the protection of the information system	5, 6
	5. Present the acquired knowledge, ideas, problems and solutions independently and in a team.	6
	6. Use materials and tools to search scientific and professional literature in native and English languages	3
	7. Identify and rank security threats and select and apply appropriate countermeasures to protect the information system	3

2.5. Course content according to detailed curriculum schedule

Constructive allignement

no	Thematic unit	LO of the course	Content/teaching methods	Evaluation	Time
1.	Defining security issues, objectives, principles and security policy	1, 2, 5	Listen to lectures. Work independently on computer, get to know course content and elearning documents.	-	18 h
2.	Defining security issues, objectives, principles and security policy	1, 2, 3, 5	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the midterm or written / oral exam, they define the foundations of analysis and risk	10 h
3.	Access control and flow control; Mathematical models of security	2, 3	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the midterm or the written / oral exam, they define the basic concepts of access controls and flows.	10 h
4.	Basics of cryptography; The protocols, techniques and algorithms	7	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the midterm or the written / oral exam, they define the basic concepts of cryptography.	10 h
5.	The architecture of the security system – basic modules	3, 4, 5, 6, 7	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the midterm or the written / oral exam, they define the basic concepts of security architectures	10 h
6.	Methods of digital identification and authentification	3, 4, 5, 6, 7	Write the colloquium.	-	10 h
7.	Security and protection of programs and operating systems	3, 4, 5, 6, 7	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the colloquium or the written / oral exam define security and protection of programs and operating systems	10 h
8.	Standards and criteria for evaluation of security and thrustworthiness of systems	3, 4, 5, 6, 7	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the colloquium or the written / oral exam define Standards and criteria for evaluation of security and thrustworthiness of systems	10 h
9.	Investment proposal and feasibility study	3, 4, 5, 6, 7	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the colloquium or the written / oral exam define Investment proposal and feasibility study	10 h

	10.	Security of computer networks and distributed systems	3, 4, 5, 6, 7	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the colloquium or the written / oral exam define Security of computer networks and distributed systems	10 h	
	11.	Systems for the detection of security breach (IDS)	3, 4, 5, 6, 7	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the colloquium or the written / oral exam define Systems for the detection of security breach (IDS)	11 h	
	12.	Managing and monitoring the security system (ISMS); Legal and Ethical Aspects of Security	3, 4, 5, 6, 7	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the colloquium or the written / oral exam define anaging and monitoring the security system (ISMS); Legal and Ethical Aspects of Security	11 h	
	13.	Managing security incidents and business continuity	3, 4, 5, 6, 7	Listen to lectures and read literature. The exercises demonstrate how to solve tasks. Solve exercises.	At the colloquium or the written / oral exam define anaging security incidents and business continuity	10 h	
	14.	Defense and presentation of the seminar, recurrence of colloquia	1, 2, 3, 4, 5, 6, 7	Write the colloquium.	-	10 h	
	15.	Defense and presentation of the seminar, recurrence of colloquia		Listen to lectures and read literature.	-	10 h	

3. EVALUATION OF STUDENTS` WORK

3.1. Students` obligations	In accordance with the Regulations on Studying and the Regulations onStudentAssessment and Evaluation: for all full-time students attendance of at least 70%. Part-time students are required to attend classes at least50%.All students are required to carry calculator and formulae list. Students who have during the course achieved: • from 0 - 24,9% ECTS credits- are rated F (unsuccessful) and cannot obtain ECTS credits, and must re-enroll in the next academic year; • from 25 - 49,9% - are assessed by FX (insufficient) and must pass the written exam (test). Written exam (test) can be held in a regular or extraordinary exam period; • more than 50% - students have the right to take the final exam. Students cantake the final exam from the course in two ways: a) during the course ofteaching through continuous monitoring of students (active participationin classes and through two colloquia); b) by passing the exam (writtenand oralpart of the exam).					
3.2. Monitoring student work (enter the share of ECTS credits for each activity so that the total number of ECTS points corresponds to the credit score of the course)	Attendance	0,5	Written exam	2,0 (without colloquia)	Project	
	Experimental work		Research		Practical work	
	Essay		Report		Continuous examination	
	Colloquium	2,0 (without written exam)	Seminar paper	0,5	Other	
	Class activity		Oral exam	1,0	Other	
3.3. Student workload	Student workload on all bases for 1 ECTS credit is 30 hours in a semester and is estimated as: Attending classes and exercises 60 hours Preparing colloquia or exams through individual work 60 hours					

4. GRADING SYSTEM

4.1. Grading seminar papers

4.2. Grading colloquia/ written and oral exam

Unsatisfactory	Satisfactory	Above average
Responds by memory, without a deeper understanding. Does not know or apply basic terms and concepts. Does not know how to apply or explain the contents of the course with examples.	Reproduces the basic concepts and without difficulty imparts new knowledge, understands the material, explains the terms and concepts supported with examples.	Knowledge is at the level of analysis, synthesis and evaluation. Observes the principles, accurately and thoroughly explains the content of the material, and logically connects and explains the terms and concepts supported with examples. Finds solutions that were not originally given. Notes correlations with related material.

4.3. Final grade according to evaluation elements

Active course attendance	70-74,9% of attendance	75-79,9% of attendance	80-89,9% of attendance	90-100% of attendance
	2 points	5 points	10 points	20 points
Colloquia/ Written exam	2	3	4	5
	50-64,9%	65-79,9%	80-89,9%	90-100%
	25 points	30 points	35 points	40 points
Oral exam	2	3	5	5
	25 points	30 points	35 points	40 points

4.3. Final grade according to absolute division

Percentage of acquired knowledge, skills and competences (teaching + final exam)	Numerical grade	ECTS grade
90 – 100%	5 (excellent)	A
80 – 89,9%	4 (very good)	B
65 – 79,9%	3 (good)	C
60 – 64,9%	2 (satisfactory)	D
50 – 59,9%	2 (satisfactory)	E

5. ADDITIONAL COURSE INFORMATION

5.1. Compulsory literature (available in the library and via other media)

Title	Number of copies in the library	Availability via other media
Bruce Schneier (1996.), Applied Cryptography B. Schneier John Wiley & Sons 1996, John Wiley & Sons, Inc		

	BS ISO/IEC 17799:2005, BS 7799-1:2005 norma: information technology, security techniques, code of practice for information security management. BSI, UK. Charles P. Pfleger (1997.), Security in Computing, Prentice Hall			
5.2. Additional literature (at the moment of changes and/or amended of study programme)	Teaching material and exercises Harold F. Tipton, Micki Krause (2000.), Information Security Management Handbook, CRC Press LLC			
5.3. Quality assurance methods that ensure the acquisition of knowledge, skills and competences	The control of students' work quality and the acquisition of necessary knowledge and skills will be ensured through interactive work. By keeping track of attendance and student activity during classes and provided information on students` progress through short colloquiums and homework, information for further guidance to students will be provided in order to increase the efficiency of their work. Students will be informed about their rights and obligations as well as the methods of work and the required literature. Indicators of quality assurance system: Student survey, monitoring of annual data from the Croatian employment service on the annual state of student employment, surveys from employers and Alumni association.			
5.4. Informing about the course and contacting the teacher	It is the responsibility of each student to be regularly informed about the course, the coursework, and the classroom activities. All notices of classes or possible adjournment will be published in a timely manner on the e-learning site of the course and on the website of the Polytechnic. Students can contact teachers during the consultation period (at least one hour per week), while for short questions and explanations they can be contacted during class. It is also possible to ask questions by e-mail (from the official e-mail address at @ vus.hr), which will be answered as soon as possible (no later than five working days after receiving the e-mail).			

4. GENERAL COURSE INFORMATION			
1.1. Course title	**Computer Networks**	1.8. Course code in ISVU	
1.2. Course lecturer	Zvonimir Klarin	1.9. Course code in MOZVAG	
1.3. Assistants and/or associates	Zvonimir Klarin, mag.ing.comp, teaching assistant	1.10. Forms of teaching (number of hours Lecturing +Practical exercises + Seminars + e learning)	(30+30+0+0)
1.4. Study program (specialist, undergraduate, graduate)	**Undergraduate Professional Study Business Informatics**	1.11. Level of e- learning application (1st, 2nd, 3rd level), percentage of on line course performance (max. 20%)	1st, course materials are on-line, 0%
1.5. Course status (mandatory, elective)	Mandatory	1.12. Number of course revisions	2.
1.6. Year of study	2nd	1.20. Modernization	Yes
1.7. Credit score (ECTS)	4	1.14. Percentage estimate of course changes and/or supplements	Less than 20% X□ More than 20 % □

2. COURSE DESCRIPTION	
2.1. Course objectives	Gain higher level knowledge of networking technologies, transmission media, network devices and standards. Students will apply the acquired knowledge in a simulated network environment.
2.2. Terms of course entry and required competences	Completed a four-year high school education; possession of a qualification at level 4.2 according to the CROQF. The condition for access to the exam is passing the course Introduction to Computer Networks.

2.3. . Learning outcomes on the study program level	LO1: Analyze the situation, identify opportunities and anticipate the problems encountered by organizations and individuals in the application of information technologies LO5: Interpret mechanisms of data flow control, error control and fragmentation, ways of multiplexing data transmission using routing methods in computer networks LO11: Link the activities of building and maintaining information system with the needs of clients and users LO13: Rank security threats and select appropriate countermeasures to protect the information system	
2.4. Expected learning outcomes on the course level	**Learning outcomes** according to the Bloom`s taxonomy: (up to two verbs per LO)	**Level of LO:** *1- remembering,* *2- understanding,* *3- application,* *4-analysis,* *5-evaluation,* *6-synthesis*
	20. Define and distinguish the basic concepts of networking technologies.	1,4
	21. Describe and distinguish data transmission standards.	2
	22. Evaluate and distinguish different network devices when configuring a network.	4, 5
	23. Configure network access.	4
	24. Define virtual networks.	1
	25. Assess the security of computer network elements.	4,5

2.5. Course content according to detailed curriculum schedule

Constructive allignament

no	Thematic unit	LO of the course	Content/teaching methods	Evaluation	Time
106.	Introduction to the course and detailed curriculum	1	Listen to lectures. During the exercises, get acquainted with the content of the course and documents on the e-learning platform of the course.	-	4 h
107.	Internet, WAN and routers	1	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Explain the Internet globally.	4 hi
108.	Router configuration	1,2	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Configure a simple router.	4 h
109.	Discovering and connecting new network devices	3	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Connect different network devices	4 h
110.	Router operating system	2	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Know the basics of router operating system.	4 h
111.	Routed and routing protocols	1, 2, 3	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Distinguish and explain various communication protocols.	4 h

	112.	TCP/IP control messages	2	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Explain the purpose of acknowledgement messages.	4 h
	113.	TCP and UDP operations	2	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Distinguish different data traffic.	4 h
	114.	Access to network resources – Access-control lists	4	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Define access-control lists.	4 h
	115.	OSPF and EIGRP protocols	2	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Explain routing protocols.	4 h
	116.	Managed network switch	4, 5	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Configure a managed network switch.	8 h
	117.	Virtual LAN	4, 5	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Configure a virtual network.	4 h
	118.	WAN technologies	2	Listen to lectures. During the exercises, through independent work get acquainted with the thematic unit.	Distinguish technologies for transferring large amounts of data.	4 h
	119.	Network management	1,2	Listen to lectures, read literature, and prepare individually for the colloquium.	Manage and monitor network elements.	4 h
	120.	Concluding remarks and preparation for the exam	6	Listen to lectures and prepare for the exam individually.	-	60 h

3. EVALUATION OF STUDENTS` WORK

3.1. Students` obligations	In accordance with the Regulations on Studying and the Regulations on Student Assessment and Evaluation: for all full-time students attendance of at least 70%. Part-time students are required to attend classes at least 50%. Students who have during the course achieved: • from 0 - 24,9% ECTS credits- are rated F (unsuccessful) and cannot obtain ECTS credits, and must re-enroll in the next academic year; • from 25 - 49,9% - are assessed by FX (insufficient) and must pass the written exam (test). Written exam (test) can be held in a regular or extraordinary exam period; • more than 50% - students have the right to take the final exam. Students can take the final exam from the course in two ways: a) during the course of teaching through continuous monitoring of students (active participation in classes); b) by passing the exam (written and oral part of the exam).

3.2. Monitoring student work (enter the share of ECTS credits for each activity so that the total number of ECTS points corresponds to the credit score of the course))						
	Attendance	0,5	Written exam	2	Project	
	Experimental work		Research		Practical work	
	Essay		Report		Continuous examination	1
	Colloquium		Seminar paper		Other	
	Class activity	0,5	Oral exam	1	Other	

3.3. . Student workload	Student workload on all bases for 1 ECTS credit is 30 hours in a semester and is estimated as: 1. Attending classes and exercises 60 hours 2. Preparing colloquia or exams through individual work 60 hours

4. FORMIRANJE OCJENE

4.1. Grading seminar papers	-

4.2. Grading colloquia/ written and oral exam

Unsatisfactory	Satisfactory	Above average
Responds by memory, without a deeper understanding. Does not know or apply basic terms and concepts. Does not know how to apply or explain the contents of the course with examples.	Reproduces the basic concepts and without difficulty imparts new knowledge, understands the material, explains the terms and concepts supported with examples.	Knowledge is at the level of analysis, synthesis and evaluation. Observes the principles, accurately and thoroughly explains the content of the material, and logically connects and explains the terms and concepts supported with examples. Finds solutions that were not originally given. Notes correlations with related material.

4.3. Final grade according to evaluation elements

Active course attendance	70-74,9% of attendance	75-79,9% of attendance	80-89,9% of attendance	90-100% of attendance
	2 points	5 points	10 points	20 points
Colloquia/ Written exam	2	3	4	5
	50-64,9%	65-79,9%	80-89,9%	90-100%
	25 points	30 points	35 points	40 points
Oral exam	2	3	5	5
	25 points	30 points	35 points	40 points

4.4. Final grade according to absolute division

Percentage of acquired knowledge, skills and competences (teaching + final exam)	Numerical grade	ECTS grade
90 – 100%	5 (excellent)	A
80 – 89,9%	4 (very good)	B
65 – 79,9%	3 (good)	C
60 – 64,9%	2 (satisfactory)	D
50 – 59,9%	2 (satisfactory)	E

5. ADDITIONAL COURSE INFORMATION			
5.1. Compulsory literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**
	8. Cisco Certified Network Associate (CCNA), CISCO, 2012. 9. Computer Networks (5th edition),Tanenbaum,Wetherall,2011		Available on the e-learning page of the course
5.2. Additional literature (at the moment of changes and/or amended of study program)			
5.3. Quality assurance methods that ensure the acquisition of knowledge, skills and competences	The control of students' work quality and the acquisition of necessary knowledge and skills will be ensured through interactive work. By keeping track of attendance and student activity during classes and provided information on students` progress through short colloquiums and homework, information for further guidance to students will be provided in order to increase the efficiency of their work. Students will be informed about their rights and obligations as well as the methods of work and the required literature. Indicators of quality assurance system: Student survey, monitoring of annual data from the Croatian employment service on the annual state of student employment, surveys from employers and Alumni association.		
5.4. Informing about the course and contacting the teacher	It is the responsibility of each student to be regularly informed about the course, the coursework, and the classroom activities. All notices of classes or possible adjournment will be published in a timely manner on the e-learning site of the course and on the website of the Polytechnic. Students can contact teachers during the consultation period (at least one hour per week), while for short questions and explanations they can be contacted during class. It is also possible to ask questions by e-mail (from the official e-mail address at @ vus.hr), which will be answered as soon as possible (no later than five working days after receiving the e-mail).		

1. GENERAL INFORMATION ABOUT THE SUBJECT			
1.1. Title	**Digital Marketing and Marketing Analytics**	1.8. ISVU course code	
1.2. Lecturer	Jelena Šišara	1.9. MOZVAG course code	
1.3. Assistants and/or associates		1.10. Forms of teaching (number of hours Lecturing +Practical exercises + Seminars + e learning)	(30+0+15+0)
1.4. Study programme (specialist, undergraduate, graduate)	**Undergraduate professional study of Business Informatics**	1.11. Level of e- learning application (1st, 2nd, 3rd level), percentage of on line course performance (max. 20%)	3rd level - materials available on-line, taking a colloquium and a written exam on a computer
1.5. Course status (mandatory, elective)	Elective	1.12. Number of course revisions	2.
1.6. Study year	3rd	1.13. Modernization	■ yes no
1.7. Credit score (ECTS)	4	1.14. Percentage estimate of course changes and/or supplements	Less than 20% ■ More than 20 % □

2. COURSE DESCRIPTION	
2.1. Course objectives	Master the basics of marketing and the specifics of digital marketing, get acquainted with digital marketing activities, learn about the role of data in digital marketing, learn to analyze data, learn to choose the right tactics of digital marketing, evaluate different channels used in campaigns and to create and implement digital marketing plan.
2.2. Terms of course entry and required competences	Completed four-year high school education; possession of a qualification at level 4.2 according to the CROQF.
	IU4 Evaluate various digital channels in marketing campaigns and create and implement a digital marketing plan

2.3. Learning outcomes on the study programme level	IU9 Select appropriate professional literature in Croatian and foreign languages, prepare and independently hold presentations in Croatian and foreign language to professional and general audiences, and critically evaluate presented professional topics	
	IU15. Compare and select appropriate development tools at the professional level	
2.4. Expected learning outcomes on the course level	**Learning outcomes** towards Bloom's taxonomy: (up to two verbs per LO)	**LO Level:** *43. Recapture,* *44. Understanding,* *45. Application,* *46. Analysis,* *47. Evaluation,* 48. *Synthesis*
	1. Master the basics and specifics of digital marketing	1,2,3,4,5,6
	2. Get acquainted with digital marketing activities	2,3,4,5,6
	3. Get to know the role of data in digital marketing	2,3,4,5,6
	4. Learn to analyze data	2,3,4,5,6
	5. Learn to choose the right digital marketing tactics	2,3,4,5,6
	6. Evaluate the different channels used in the campaigns	2,3,4,5,6
	7. Create and implement a digital marketing plan	2,3,4,5,6

2.5. Course content according to detailed curriculum schedule

Constructive alignment

No:	Thematic ensemble / Lecture Topic	Course LO	Content / Teaching Method	Evaluation	Time needed
121.	Introduction to the course and detailed performance plan of teaching.	-	Listen to lectures.	-	2 hours
	Marketing yesterday, today and tomorrow	1	Listen to lectures, work on computers, read literature.	Describe essential digital marketing standards in the context of historical development Interpret the basics of digital marketing	8 hours
122.	Overview of basic marketing activities	1,2,3,4	Listen to lectures, work on computers, read literature.	Explain basic marketing activities	5 hours
123.	Digital marketing specifics	1,2,3	Listen to lectures, work on computers, read literature.	Evaluate the specifics of digital marketing	5 hours
124.	Digital marketing activities management	1,2,3,4	Listen to lectures, work on computers, read literature.	Manage digital marketing activities	5 hours
125.	Digital marketing activities management	1,2,3,4,5,6	Listen to lectures, work on computers, read literature.	Manage digital marketing activities	5 hours
126.	Data as the basis of digital marketing	1,2,3,4,5,6	Listen to lectures, work on computers, read literature.	Analyze a data set on a computer for application purposes in digital marketing activities	5 hours
127.	Data as the basis of digital marketing	3,4,5,6	Listen to lectures, work on computers, read literature.	Analyze a data set on a computer for application purposes in digital marketing activities	5 hours
128.	Segmentation and targeting of customers	3,4,5,6	Listen to lectures, work on computers, read literature.	Create customer segmentation. Specify target groups of customers	10 hours

	129.	Segmentation and targeting of customers	1,2,3,4,5,6,7	Listen to lectures, work on computers, read literature.	Create customer segmentation. Specify target groups of customers	10 hours
	130.	Creating and evaluating a digital sales funnel	1,2,3,4,5,6,7	Listen to lectures, work on computers, read literature.	Create a digital sales funnel.	10 hours
	131.	Creating and evaluating a digital sales funnel	1,2,3,4,5,6,7	Listen to lectures, work on computers, read literature.	Rate the digital sales funnel.	10 hours
	132.	Omnichannel and its measurement	1,2,3,4,5,6,7	Listen to lectures, work on computers, read literature.	Explain Omnichannel approach to the customer	10 hours
	133.	Omnichannel and its measurement	1,2,3,4,5,6,7	Listen to lectures, work on computers, read literature.	Measure Omnichannel activities	10 hours
	134.	Differences between digital sales and digital marketing	1,2,3,4,5,6,7	Listen to lectures, work on computers, read literature.	Identify key differences between digital sales and digital marketing	10 hours
	135.	Project Presentation	1,2,3,4,5,6,7	Listen to lectures, work on computers, read literature, individual preparing for exam.	Presentation of the project	10 hours

3. EVALUATION OF STUDENT WORK

3.1. Students` obligations

In accordance with the Book of Rules and the Rulebook on Student Assessment and Evaluation: for all regular students attend at least 70% attendance. Part-time students have the obligation to attend at least 50% of lectures. All students must create, present and positively colloquy seminar paper.

Students who have during the course achieved:

- From 0 – 24,9% ECTS credits- is rated F (unsuccessful) and cannot get ECTS credits and must re-enrol the subject in the next academic year;
- From 25 – 49,9% ECTS credits - is rated FX (inadequate) and has to come out and pass the test (exam). A written exam can be held in a regular or extraordinary exam period;
- More than 50% ECTS credits - students have the right to access the final exam of the subject.

Students can take the final exam in the course in two ways: a) during teaching through continuous monitoring of students (active participation in classes and exercises and two exams); b) during class (active participation in classes and exercises) and passing exams (written and oral examinations).

3.2. Monitoring student work (enter the share of ECTS credits for each activity so that the total number of ECTS points corresponds to the credit score of the course)

Attendance	1	Written exam	1 (no colloquiums)	Project	
Experimental work		Research		Practical work	
Essay		Report		Continuous examination	
Colloquium	2 (no written and oral exam)	Seminar paper	1	Other (inscribe)	
Class activities		Oral exam	1 (no colloquiums)	Other (inscribe)	

3.3. Student workload

The student's workload on all bases amounts to 1 ECTS point for 30 hours of work per semester and is estimated as:

Commitment	***Hours (estimate)***
27. Attending classes	40

	28. Practical work	40
	29. Preparation for the Colloquium / exam through self-study	40

4. GRADING

4.1. Seminar paper grading

4.2. Colloquium / exam grading

Poor	Satisfying	Above average
Give answer by memory, no deeper understanding. Does not know and does not apply the basic terms and concepts. Cannot apply or explain the contents of the course.	Reproduces basic terms, without difficulty transfers new knowledge, understands subject matter, explains the terms and the notions that substantiate by examples.	Knowledge is at the level of analysis, synthesis and evaluation. It observes legitimacy, accurately and thoroughly explains the content of the subject, and logically links and explains the terms and concepts that it encapsulates. Find solutions that are not originally given. There is a correlation with correlative subjects.

4.3. Creating a final grade according to evaluation elements

Active participation in the lessons	70-75% of attendance	76-86% of attendance	87-100% of attendance	Created mental map. Solved case study.
	4 points	7 points	10 points	
Seminar paper	2	3	4	5
	5 points	7 points	8 points	10 points
Colloquium / written exam	2	3	4	5
	50-64,9%	65-79,9%	80-89,9%	90-100%
	25 points	30 points	35 points	40 points
Oral exam	2	3	5	5
	25 points	30 points	35 points	40 points

4.4. Creating a final grade according to absolute allocation

Percentage of adopted knowledge, skills and competences (teaching + final exam)	Numerous grade	ECTS grade
90 – 100%	5 (excellent)	A
80 – 89,9%	4 (very good)	B
65 – 79,9%	3 (good)	C
60 – 64,9%	2 (sufficient)	D
50 – 59,9%	2 (sufficient)	E

5. ADDITIONAL INFORMATION ABOUT THE COURSE

5.1. Compulsory literature (available in the library and through other media)	**Title**	**Number of copies in the library**	**Availability via other media**
	1. Peer-reviewed teaching materials in the subject, available on the e-learning system		Available online
	2. J.Pavičić , N. Drašković , V. Gnjidić, Osnove strateškog marketinga, Školska knjiga, 2014.	5	
5.2. Additional literature (at the moment of changes and/or amended of study programme)	3. Penović, A., Cetinić, M., Rašeta, I., Ličina, B., Pobijedite internet ili će internet pobijediti vas, Jasno & Glasno, 2014	5	
5.3. Quality assurance methods that ensure the acquisition of knowledge, skills and competences	The control of students' work quality and the acquisition of necessary knowledge and skills will be ensured through interactive work. By keeping track of attendance and student activity during classes and provided information on students` progress through short colloquiums and homework, information for further guidance to students will be provided in order to increase the efficiency of their work. Students will be informed about their rights and obligations as well as the methods of work and the required literature. Indicators of quality assurance system: Student survey, monitoring of annual data from the Croatian employment service on the annual state of student employment, surveys from employers and Alumni association.		
5.4. information on the course and contact with the teacher	It is obligatory for every student to regularly inform about the course, teaching and teaching activities. All information about teaching or any delay in teaching will be published on the e-learning pages of the course and on the web pages of the Polytechnic. Students can contact the teachers during the consultation term (at least one hour per week), while brief questions and explanations can be addressed during classes. It is possible to ask questions by e-mail (from the official e-mail address from the domain @ vus.hr) that will be answered in a short time (no later than five working days from the receipt of e-mail).		

1. GENERAL INFORMATION ABOUT THE SUBJECT			
1.1. Title	**Operations Research**	1.8. ISVU course code	214382
1.2. Lecturer	Ivana Beljo	1.9. MOZVAG course code	
1.3. Assistants and/or associates		1.10. Forms of teaching (number of hours Lecturing +Practical exercises + Seminars + e learning)	(30+30+0+0)
1.4. Study programme (specialist, undergraduate, graduate)	**Professional Undergraduate Study of Business Informatics**	1.11. Level of e- learning application (1st, 2nd, 3rd level), percentage of on line course performance (max. 20%)	1st – materials available On-line, (lectures recorded) 20%
1.5. Course status (mandatory, elective)	Mandatory	1.12. Number of course revisions	0.
1.6. Study year	3	1.13. Modernization	□ yes ■ no
1.7. Credit score (ECTS)	4	1.14. Percentage estimate of course changes and/or supplements	Less than 20% □ More than 20 % □

2. COURSE DESCRIPTION	
2.1. Course objectives	.The aim of this course is to train students in use of quantitative methods for decision making: • Creating mathematical models of various business problems; • Finding best method for getting optimal solution based on model; • Evaluate solution and perform sensitivity analysis; • Apply the learned content of this course in business practice.
2.2. Terms of course entry and required competences	Four-year high school education completed; having a qualification at level 4.2 Finished courses: Mathematics, Business Statistics

2.3. Learning outcomes on the study programme level	LO2. Evaluate and define steps in planning, decision making, operations and control then applying computer aided business and manufacturing LO7. Select and use quantitative/mathematical methods, models and techniques appropriate for solving problems from informatics and business domain. LO9. To individually and responsibly search and select relevant literature in Croatian and foreign languages, prepare papers and presentations for general and professional audience and critically evaluate presented professional topics. LO14. Successfully communicates with clients, users and colleagues, both verbal and in writing, using suitable terminology, what also includes ability to communicate in foreign language about professional topics. LO15. Compare and select suitable development tools from professional viewpoint. LO16. Evaluate deciding factors that have impact on businesses and individual and apply basic methods and concepts of planning, managing and auditing business.	
2.4. Expected learning outcomes on the course level	**Learning outcomes** towards Bloom's taxonomy: (up to two verbs per LO)	**LO Level:** *49. Recapture,* *50. Understanding,* *51. Application,* *52. Analysis,* *53. Evaluation,* 54. *Synthesis*
	1. Recognize and analyze problems from the business domain which can be solved by linear programming.	2,3
	2. Design linear programming model for recognized problems.	3,4
	3. Apply Simplex method for solving common problems in business.	3,4
	4. Present advantages and limitations of methods and techniques for linear programming on given problem.	4,5
	5. Apply streamlined Simplex method on specific business problems (transport, assignment, stock control, scheduling, network etc.	3,4
	6. Understand and apply different approach in decision making based on problem characteristics.	2,3
	7. Use software tools (Excel add-ins) for creating and solving linear, non-linear and integer problems.	3
	8. Recognize biases and fallacies that impact rationality of decision maker and avoid them.	2,3
	9. Evaluate and interpret results of model solving and perform sensitivity analysis for common problems met in the business.	4,5

2.5. Course content according to detailed curriculum schedule	**Constructive alignment**					
	No:	**Thematic ensemble / Lecture Topic**	**Course LO**	**Content / Teaching Method**	**Evaluation**	**Time needed**
	136.	Introduction to Operations Research.	1,2	Listen to the lecture and read the literature.	Checked by written test and oral exam: student can estimate influence of technology development on capabilities and performance of computers.	2 hours
	137.	Linear problems, mathematical model and geometric visualization.	1,2,3	Listen to the lecture, read the literature and solving exercises.	-"- : student can create mathematical model of common linear problem	6 hours

	138.	Simplex method	1,2,3	Listen to the lecture + solving exercises using computer tools.	-"- : student designs and solves model of the given problem	8 hours
	139.	Solving linear problems in Excel	2,3,4,7	Listen to the lecture + solving exercises using computer tools.	-"- : student designs and solves model of the given problem	10 hours
	140.	Post-optimal analysis, sensitivity and shadow price	2,3,4,7,9	Listen to the lecture + solving exercises using computer tools.	-"- : student evaluate results of model solution	8 hours
	141.	Special cases of linear problems, transport problems	1,2,4,5,6,7	Listen to the lecture + solving exercises using computer tools.	-"- : student designs and solves model of the given problem	10 hours
	142.	Problem of assignation, modelling in Excel	1,2,4,5,6,7	Listen to the lecture + solving exercises using computer tools.	-"- : student designs and solves model of the given problem	8 hours
	143.	Network models: Minimum Price Maximal Flow Problem	1,2,4,5,6,7	Listen to the lecture + solving exercises using computer tools.	-"- : student designs and solves model of the given problem	10 hours
	144.	Network models for project management.	1,2,4,5,6,7	Listen to the lecture + solving exercises using computer tools.	-"- : student designs and solves model of the given problem	8 hours
	145.	Dynamic programming	4,5,6	Listen to the lecture + solving exercises using computer tools.	-"- : student designs and solves model of the given problem	8 hours
	146.	Integer programming in Excel	4,5,6,7,8	Listen to the lecture + solving exercises using computer tools.	-"- : student designs and solves model of the given problem	8 hours
	147.	Decision-making theory: Decisions tree.	4,5,6,7,8	Listen to the lecture + solving exercises using computer tools.	-"- : student designs and solves model of the given problem	10 hours
	148.	Methods for solving nonlinear problems in Excel	6,7,8,9	Listen to the lecture + solving exercises using computer tools.	-"- : student designs and solves model of the given problem	8 hours
	149.	Selecting best methods for solving common business problems	4,5,6,7,9	Listen to the lecture + solving exercises using computer tools.	Checked by oral exam: Student can select optimal method for modelling given business problem and understand it's advantages and limitations	8 hours
	150.	Common fallacies in decision making	8,9	Listen to the lecture and individual preparation for the exam.	Checked by oral exam: Student recognises common fallacies and biases in decision making	8 hours

3.1. Students` obligations	In accordance with the Book of Rules and the Rulebook on Student Assessment and Evaluation: for all regular students attend at least 70% attendance. Part-time students have the obligation to attend at least 50% of lectures through physical presence or via on-line attendance. Students who have during the course: • satisfied minimal attendance condition, may approach colloquium or written exam. • past 50% score from all colloquium or from written exam (exam can be held in a regular or extraordinary exam period) may approach final oral exam • past both written and oral exams receive grade and all ECTS credits for that course

	Attendance	0.4	Written exam	1.6 (by submitting both colloquiums the student is	Project	

<table>
<tr><td rowspan="5">3.2. Monitoring student work (enter the share of ECTS credits for each activity so that the total number of ECTS points corresponds to the credit score of the course)</td><td></td><td></td><td></td><td>relieved of an written examination)</td><td></td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Research</td><td></td><td>Practical work</td><td></td></tr>
<tr><td>Essay</td><td></td><td>Report</td><td></td><td>Continuous examination</td><td></td></tr>
<tr><td>Colloquium</td><td>3 (by submitting both colloquiums the student is relieved of a written and oral examination)</td><td>Seminar paper</td><td></td><td>Other (inscribe)</td><td></td></tr>
<tr><td>Class activities</td><td>0.4</td><td>Oral exam</td><td>1.6 (by submitting both colloquiums the student is relieved of an oral examination)</td><td>Other (inscribe)</td><td></td></tr>
<tr><td>3.3. Student workload</td><td colspan="6">The student's workload on all bases amounts to 1 ECTS point for 30 hours of work per semester and is estimated as:
<table>
<tr><th>Commitment</th><th>Hours (estimate)</th></tr>
<tr><td>30. Attending classes</td><td>45</td></tr>
<tr><td>31. Creating and Presenting seminar paper</td><td>10</td></tr>
<tr><td>32. Preparation for the Colloquium / exam through self-study</td><td>65</td></tr>
<tr><td></td><td></td></tr>
</table></td></tr>
<tr><td colspan="7">4. GRADING</td></tr>
<tr><td>4.1. Seminar paper grading</td><td colspan="6"></td></tr>
<tr><td>4.2. Colloquium / exam grading</td><td colspan="6"><table>
<tr><th>Poor</th><th>Satisfying</th><th>Above average</th></tr>
<tr><td>Give answer by memory, no deeper understanding. Does not know and does not apply the basic terms and concepts. Cannot apply or explain the contents of the course.</td><td>Reproduces basic terms, without difficulty transfers new knowledge, understands subject matter, explains the terms and the notions that substantiate by examples.</td><td>Knowledge is at the level of analysis, synthesis and evaluation. It observes legitimacy, accurately and thoroughly explains the content of the subject, and logically links and explains the terms and concepts that it encapsulates. Find solutions that are not originally given. There is a correlation with correlative subjects.</td></tr>
</table></td></tr>
</table>

4.3. Creating a final grade according to evaluation elements	Active participation in the lessons	70-75% of attendance	76-86% of attendance	87-100% of attendance	Activity in class
		2 points	5 points	10 points	+10 points
	Colloquium / written exam	2	3	4	5
		50-64,9%	65-79,9%	80-89,9%	90-100%
		25 points	30 points	35 points	40 points
	Oral exam	2	3	5	5
		25 points	30 points	35 points	40 points

4.4. Creating a final grade according to absolute allocation

Percentage of adopted knowledge, skills and competences (teaching + final exam)	Numerous grade	ECTS grade
88 – 100%	5 (excellent)	A
78 – 87.9%	4 (very good)	B
62 – 77.9%	3 (good)	C
50 – 61,9%	2 (sufficient)	D
0 – 49.9%	1 (unsufficient)	F

5. ADDITIONAL INFORMATION ABOUT THE COURSE

	Title	Number of copies in the library	Availability via other media
5.1. Compulsory literature (available in the library and through other media)	1. Kalpić D., Mornar V., Operacijska istraživanja, DRIP, Zagreb 1996. 2. Hillier F., Lieberman G. : Introduction to operations Research, McGraw Hill 8th ed. 2005, 3. Ragsdale C., Spreadsheet Modeling & Decision Making, Thompson South-Western, 5th ed., 2008	5 1 1	- On-line, pdf On-line, pdf
5.2. Additional literature (at the moment of changes and/or amended of study programme)	10. Swift L., Piff S.: Quantitative Methods for Business, Menagement and Finance, Palgrave, 3rd Ed. 11. Bradley, Hax, and Magnanti : Applied Mathematical Programming, Addisson-Wesley, 1977	1 1	- On-line, pdf
5.3. Quality assurance methods that ensure the acquisition of knowledge, skills and competences	The control of students' work quality and the acquisition of necessary knowledge and skills will be ensured through interactive work. By keeping track of attendance and student activity during classes and provided information on students` progress through short colloquiums and homework, information for further guidance to students will be provided in order to increase the efficiency of their work. Students will be informed about their rights and obligations as well as the methods of work and the required literature. Indicators of quality assurance system: Student survey, monitoring of annual data from the Croatian employment service on the annual state of student employment, surveys from employers and Alumni association.		

1. GENERAL INFORMATION ABOUT THE SUBJECT			
1.1. Title	**Quality Management**	1.8. ISVU course code	142639
1.2. Lecturer	Divna Goleš, Master of Economics, Senior lecturer	1.9. MOZVAG course code	
1.3. Assistants and/or associates	None	1.10. Forms of teaching (number of hours Lecturing +Practical exercises + Seminars + e learning)	(30+0+15+0)
1.4. Study programme (specialist, undergraduate, graduate)	Professional Undergraduate Studies of Management, Department of IT Management	1.11. Level of e- learning application (1st, 2nd, 3rd level), percentage of on line course performance (max. 20%)	1st – materials available On-line, 0%
1.5. Course status (mandatory, elective)	Elective	1.12. Number of course revisions	2.
1.6. Study year	3rd	1.13. Modernization	▪ yes □ no
1.7. Credit score (ECTS)	4	1.14. Percentage estimate of course changes and/or supplements	Less than 20% ▮ More than 20 % □

2. COURSE DESCRIPTION	
2.1. Course objectives	The aim of the collegium is to familiarize students with important terms in the area of Quality Management System and understanding the systems applied to quality management. Furthermore, collegium aims to familiarize, analyse and apply methods and tools that can be used to identify and eliminate non-conformities in the Quality Management System.
2.2. Terms of course entry and required competences	Admission requirements for the 3nd year of study

2.3. Learning outcomes on the study programme level	LO9: Select appropriate professional literature in Croatian and foreign language, prepare and independently present presentations in Croatian and foreign language to expert and general audiences, and critically evaluate the presented professional topics LO16: Valorize the important factors that affect the business of the organization and individuals, and apply the basic methods and concepts of planning, management and accounting of business LO17: Conclude what are the basic principles and methods of quality project management and work successfully in a team	
2.4. Expected learning outcomes on the course level	**Learning outcomes** towards Bloom's taxonomy: (up to two verbs per LO)	**LO Level:** *1. Recapture,* *2. Understanding,* *3. Application,* *4. Analysis,* *5. Evaluation,* 6. *Synthesis*
	1. Explain and critically evaluate key concepts and processes that are important in the Quality Management System	2,5
	2. Analyze the role and importance of quality policy and give a concrete example.	4,6
	3. To analyze the importance of the Quality Management System in modern market conditions	4
	4. To connect the reasons for improving the quality domain, the role of quality cost and quality-based system development.	6
	5. Choose and critically evaluate the appropriateness of selected methods and tools to solve problems in the Quality Management Systems	3,5
	6. Present seminar paper and critically judge the topic covered	6,5

2.5. Course content according to detailed curriculum schedule

Constructive alignment

No:	Thematic ensemble / Lecture Topic	Course LO	Content / Teaching Method	Evaluation	Time needed
1.	Introduction to the course and a detailed performance plan.	-	Listen to the lecture. On seminary teaching, by independent work on the computer students get acquainted with course content and documents on the e-learning course page.	-	4 hours
2.	The basis of the theory of quality.	1,2,6	They listen to a lecture. They read the literature.	At the colloquium or the written and oral exam, they define fundamental insights into quality theory.	6 hours
3.	Interested partners and their integration into the Quality Management System.	1,2,3,6	They listen to a lecture. They read the literature.	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit.	8 hours
4.	Application of quality management principles.	1,2,3,6	They listen to a lecture, they read the literature, present a seminar paper, followed by a discussion.	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit.	8 hours

	5.	Strategy, policy, mission, vision and quality goals. Business Systems and Quality Management Systems.	1,2,3,6	They listen to a lecture, work in a team on case work, present a seminar paper, followed by a discussion.	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they should present and analyze the same on a concrete example.	12 hours
	6.	Business Systems and Quality Management Systems.	1,2,3,6	They listen to a lecture, they read the literature, present a seminar paper, followed by a discussion.	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they should present and analyze the same on a concrete example.	12 hours
	7.	Documentation in the Quality Management System.	1,2,3,4,6	They listen to a lecture, work in a team on case work, present a seminar paper, followed by a discussion.	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they should present and analyze the same on a concrete example..	12 hours
	8.	Construction and modelling of business processes.	1,2,3,4,6	They listen to a lecture, work in a team on case work, present a seminar paper, followed by a discussion.	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they should present and analyze the same on a concrete example.	12 hours
	9.	Standards, guidelines and laws in the Quality Management System, I. colloquium.	2,3,4,6	They listen to a lecture, they read the literature, present a seminar paper, followed by a discussion.	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they should present and analyze the same on a concrete example.	16 hours
	10.	Concept of continuous improvement of quality.	3,4,5,6	They listen to a lecture, they read the literature, present a seminar paper, followed by a discussion.	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they should present and analyze the same on a concrete example.	12 hours
	11.	Implementation of auditing and certification process.	3,4,5,6	They listen to a lecture, work in a team on case work, present a seminar paper, followed by a discussion	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they should present and analyze the same on a concrete example-	12 hours
	12.	Troubleshooting Techniques in the Quality Management System.	3,4,5,6	They listen to a lecture, work in a team on case work, present a seminar paper, followed by a discussion	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they should present and analyze the same on a concrete example.	12 hours
	13.	Norm 9000 ff. TQM Models (Business Excellence Awards).	3,4,5,6	They listen to a lecture, work in a team on case work, present a seminar paper, followed by a discussion	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they should present and analyze the same on a concrete example.	12 hours
	14.	Quality Costs.	4,5,6	They listen to a lecture, they read the literature, present a seminar paper, followed by a discussion	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit, then they should present and analyze the same on a concrete example.	12 hours
	15.	Final lecture, course signatures, II. colloquium	1,2,3,4,5,6	They listen to a lecture and prepare independently for the exam.	At the colloquium or the written and oral exam they define and explain the concepts that occur in this thematic unit.	30 hours

3. EVALUATION OF STUDENT WORK

3.1. Students` obligations

In accordance with the Book of Rules and the Rulebook on Student Assessment and Evaluation: for all regular students attend at least 70% attendance. Part-time students have the obligation to attend at least 50% of lectures. All students must create, present and positively colloquy seminar paper.

Students who have during the course achieved:

- From 0 – 24,9% ECTS credits- is rated F (unsuccessful) and cannot get ECTS credits and must re-enrol the subject in the next academic year;
- From 25 – 49,9% ECTS credits - is rated FX (inadequate) and has to come out and pass the test (exam). A written exam can be held in a regular or extraordinary exam period;
- More than 50% ECTS credits - students have the right to access the final exam of the subject.

Students can pass the final exam in two ways: a) during the course through continuous student attendance (active participation in the lessons, making and presenting the seminar paper, passing two colloquia); b) during the course (active participation in the lessons, creating and presenting the seminar) and passing the exam (written and oral exam).

3.2. Monitoring student work (enter the share of ECTS credits for each activity so that the total number of ECTS points corresponds to the credit score of the course)

Attendance	1	Written exam	2 (by submitting both colloquiums the student is relieved of an written examination)	Project	
Experimental work		Research		Practical work	
Essay		Report		Continuous examination	
Colloquium	3,5 (by submitting both colloquiums the student is relieved of a written and oral examination)	Seminar paper	1	Other (inscribe)	
Class activities	0,5	Oral exam	1,5 (by submitting both colloquiums the student is relieved of an oral examination)	Other (inscribe)	

3.3. Student workload

The student's workload on all bases amounts to 1 ECTS point for 30 hours of work per semester and is estimated as:

Commitment	***Hours (estimate)***
33. Attending classes	60
34. Creating and Presenting seminar paper	15
35. Preparation for the Colloquium / exam through self-study	105

4. GRADING

4.1. Seminar paper grading

Valuation Element	Poor	Satisfying	Above average
Organization	The paper is not organized in a logical order and its structure is lacking.	The paper is well structured with a clear distinction between the introduction, the main part of the text and the conclusion.	The paper is well-structured with a clear distinction between the introduction, the main part of the text and the conclusions that are perfectly logically linked to one another
Terminology, writing style	Words and phrases are low harmonized with official terminology. Writing style is not appropriate, sentences are too long, modest vocabulary, and frequent and repeated grammatical mistakes.	Words and phrases are aligned with official terminology. The writing style is appropriate, the sentence structure is clear, the vocabulary is appropriate and has little grammatical errors.	Words and phrases are aligned with official terminology and show an understanding of their meaning. The writing style is excellent, the sentences are clear and concise, the vocabulary is rich and there are no grammatical errors.
Quoting and referencing	Sources are not specified at all. The references do not match the topic and show a superficial approach to the research topic.	Sources are listed, but incomplete and with errors. The references are appropriate for the subject and show a satisfactory research attitude.	Sources are accurate, complete and consistent. The references are appropriate, their list is "rich" and comprehensive and shows a robust research approach.

4.2. Colloquium / exam grading

Poor	Satisfying	Above average
Give answer by memory, no deeper understanding. Does not know and does not apply the basic terms and concepts. Cannot apply or explain the contents of the course.	Reproduces basic terms, without difficulty transfers new knowledge, understands subject matter, explains the terms and the notions that substantiate by examples.	Knowledge is at the level of analysis, synthesis and evaluation. It observes legitimacy, accurately and thoroughly explains the content of the subject, and logically links and explains the terms and concepts that it encapsulates. Find solutions that are not originally given. There is a correlation with correlative subjects.

4.3. Creating a final grade according to evaluation elements

Active participation in the lessons	70-75% of attendance	76-86% of attendance	87-100% of attendance	Solved case study and project
	2 points	4 points	7 points	3 points
Seminar paper	2	3	4	5
	5 points	7 points	8 points	10 points
Colloquium / written exam	2	3	4	5
	50-64,9%	65-79,9%	80-89,9%	90-100%
	25 points	30 points	35 points	40 points
Oral exam	2	3	5	5
	25 points	30 points	35 points	40 points

4.4. Creating a final grade according to absolute allocation		Percentage of adopted knowledge, skills and competences (teaching + final exam)	Numerous grade	ECTS grade
		90 – 100%	5 (excellent)	A
		80 – 89,9%	4 (very good)	B
		65 – 79,9%	3 (good)	C
		60 – 64,9%	2 (sufficient)	D
		50 – 59,9%	2 (sufficient)	E

5. ADDITIONAL INFORMATION ABOUT THE COURSE

	Title	Number of copies in the library	Availability via other media
5.1. Compulsory literature (available in the library and through other media)	3. Goleš D.(2011). *Upravljanje kvalitetom* script, Veleučilište u Šibeniku, Šibenik		e- learaning
	4. Injac N.(2002). *Mala enciklopedija kvalitete, I dio, Upoznajmo normu ISO 9000*, Oskar, Zagreb, 5. Šiško Kuliš M., Grubišić D.(2010). *Upravljanje kvalitetom*, Sveučilište u Splitu, Ekonomski fakultet, Split, 2010. (selected chapters)	7 2	
5.2. Additional literature (at the moment of changes and/or amended of study programme)	1. Lazibat T.(2009). *Upravljanje kvalitetom* Znanstvena knjiga, Zagreb 2. Injac N.(2001). *Mala enciklopedija kvalitete, Moderna povijest kvalitete*, Oskar, Zagreb 3. Drljača M.(2004).* Mala enciklopedija kvalitete, Troškovi kvalitete* Oskar, Zagreb 4. Injac N.(2002).*Mala enciklopedija kvalitete, Informacije, dokumentacija, auditi*, Oskar, Zagreb 5. Avelini Holjevac I.(2002).* Upravljanje kvalitetom u turizmu i hotelskoj industriji*Fakultet za turistički i hotelski menadžment, Opatija	1 6 3 5 2	
5.3. Quality assurance methods that ensure the acquisition of knowledge, skills and competences	The control of students' work quality and the acquisition of necessary knowledge and skills will be ensured through interactive work. By keeping track of attendance and student activity during classes and provided information on students` progress through short colloquiums and homework, information for further guidance to students will be provided in order to increase the efficiency of their work. Students will be informed about their rights and obligations as well as the methods of work and the required literature. Indicators of quality assurance system: Student survey, monitoring of annual data from the Croatian employment service on the annual state of student employment, surveys from employers and Alumni association.		
5.4. information on the course and contact with the teacher	It is obligatory for every student to regularly inform about the course, teaching and teaching activities. All information about teaching or any delay in teaching will be published on the e-learning pages of the course and on the web pages of the Polytechnic. Students can contact the teachers during the consultation term (at least one hour per week), while brief questions and explanations can be addressed during classes. It is possible to ask questions by e- mail (from the official e-mail address from the domain @ vus.hr) that will be answered in a short time (no later than five working days from the receipt of e-mail).		

1. GENERAL INFORMATION ABOUT THE SUBJECT			
1.1. Title	**Principles of corporate finance**	1.8. ISVU course code	141499
1.2. Lecturer	Jelena Žaja, mag.oec., lec.	1.9. MOZVAG course code	
1.3. Assistants and/or associates		1.10. Forms of teaching (number of hours Lecturing +Practical exercises + Seminars + e learning)	(45+30+0+0)
1.4. Study programme (specialist, undergraduate, graduate)	**Professional Undergraduate Study of Business Management**	1.11. Level of e- learning application (1st, 2nd, 3rd level), percentage of on line course performance (max. 20%)	1st – materials available On-line, 0%
1.5. Course status (mandatory, elective)	Elective	1.12. Number of course revisions	2.
1.6. Study year	3rd	1.13. Modernization	■ yes □ no
1.7. Credit score (ECTS)	6	1.14. Percentage estimate of course changes and/or supplements	Less than 20% ■ More than 20 % □

2. COURSE DESCRIPTION	
2.1. Course objectives	Introduce students with basic concepts of modern financial management through lectures, classroom discussions, business cases and project task solving so that after completing the course each student knows how to approach basic financial management issues and where to look for additional information to solve complex issues that appear in practice in everyday business. To introduce students to the concept of corporate finance, its role in the company's business and to expand their basic knowledge in the field of: • time preferences of money; • measurement of financial risk in function of capital cost; • money markets and capital markets, flows of funds in business processes and the interdependence of property and liabilities management and ways of financing them; • analysis of financial operations of business entities;

	• elements of financial and investment planning; • basis of financial efficiency of investment projects; • financing securities transactions with a special focus on bonds and shares and assessing the justification for investing in financial instruments in the money and capital market; • financing business with own capital; • fundamental laws of debt utilization, capital structure and dividend policy.	
2.2. Terms of course entry and required competences	No conditions.	
2.3. Learning outcomes on the study programme level	LO2: Define and evaluate the processes of thinking, planning, decision-making and management in terms of electronically supported business and production LO6: Correctly write and interpret basic concepts in the field of economics and economics of enterprises, entrepreneurs and entrepreneurship and correctly interpret their interdependencies LO8: Select and apply basic principles of planning and career development in the profession and their own entrepreneurial ventures LO9: Select appropriate professional literature in Croatian and foreign language, prepare and independently present presentations in Croatian and foreign language to expert and general audiences, and critically evaluate the presented professional topics LO14: Communicate successfully with clients, users and colleagues in a verbal and written manner using appropriate terminology including the ability to communicate about the profession in a foreign language LO16: Valorize the important factors that affect the business of the organization and individuals, and apply the basic methods and concepts of planning, management and accounting of business	
2.4. Expected learning outcomes on the course level	**Learning outcomes** towards Bloom's taxonomy: (up to two verbs per LO)	**LO Level:** *55. Recapture,* *56. Understanding,* *57. Application,* *58. Analysis,* *59. Evaluation,* 60. *Synthesis*
	15. to define and categorize basic concepts and tasks of financial management,	1,4
	16. to measure the return and financial risk of the securities portfolio and analyse the relation between risk and return,	3,4
	17. to interpret the financial relations of the enterprise with the financial institutions and the financial market,	4
	18. to evaluate the impact of financial leverage and on the profitability of business entities,	4
	19. to prepare an analysis of financial statements on the example of a business entity by performing horizontal and vertical analysis and analysis by financial indicators,	6
	20. to apply methods of net present value, return period, internal rate of return, profitability index, and assess the eligibility of investment in a project,	3,5
	21. to propose the application of appropriate models and evaluate the value of equity and debt securities,	6,5
	22. use materials and tools to search scientific and professional literature in Croatian and in English, and present accepted knowledge, ideas, problems and solutions independently and in the team.	3,6
2.5. Course content according to detailed curriculum schedule	**Constructive alignment**	

No:	Thematic ensemble / Lecture Topic	Course LO	Content / Teaching Method	Evaluation	Time needed
151.	Introduction to the course and a detailed performance plan.	-	Listen to the lecture. In the exercise classes, by independent work on computer students get acquainted with course content and documents on the e-learning course page.	-	2 hours
	Introductory lecture - basic concepts and determinants of financial management.	1, 3	Listen to the lecture and read the literature.	At the colloquium or the written and oral exam define the basic concepts of financial management. They know how to list and explain basic financial activities, sources of company assets and tasks of financial function in the company. They can explain the role of the Financial Manager, goals of corporation, and agency problem.	8 hours
152.	Financial environment.	1,3	Listen to the lecture and read the literature.	Describe the basic characteristics of the financial market. At the colloquium or the written and oral exam they know how to define and describe the basic securities that circulate in the money market.	6 hours
153.	Time value of money.	1,6	Listen to the lecture and read the literature.	They know how to explain the concept of time value of money and identify the basic variables in calculations of time value of money	10 hours
154.	The Valuation of Long-Term Securities	1, 2,7	Listen to the lecture and read the literature.	They can make distinction among valuation concepts. They know how to valuate long term securities (bond valuation, preferred stock valuation, common stock valuation).	8 hours
155.	Risk and financial management. Balance as a source of financial information.	1, 2,3, 8	Listen to the lecture and read literature. In the exercise classes, they calculate the yield and financial risk of the securities portfolio independently or in a team, and draw conclusions about the risk-return relationship.	At the colloquium or the written and oral exam they can explain the concepts of investment portfolio, financial risk and ways of managing risk. They know how to calculate the expected return, the standard deviation and the coefficient of variation for an individual security or a portfolio of securities and to evaluate the risk of investing on the basis of the relationship between risk and return. They know how to interpret the relationship between security yields and market returns. They know how to explain the concept of a balance sheet, its properties and indicate users of financial information.	8 hours
156.	Financial reports.	1, 3, 8	Listen to the lecture and read the literature.	At the colloquium or the written and oral exam they can state the types of basic financial statements and explain their basic components. Know what can all be a source of cash in a business.	8 hours
157.	Objectives, purpose and methods of analysis of financial reports.	1, 3, 6, 8	They listen to a lecture and read literature. In the exercise classes, independently on a computer, they perform horizontal and vertical analysis of financial statements on the example of a business entity's	At the colloquium or the written and oral exam they can explain the term financial analysis and specify and explain the methods of analysis of financial statements. They know how to explain horizontal and vertical analysis procedures and apply them to	12 hours

				financial statements. They research the content of this thematic area and make a project assignment that presents the knowledge they have acquired and their ideas, and ways to solve problems.	financial statement analysis. Created and presented project assignment (using computer programs).	
	158.	Indicators of financial analysis, examples and interpretations.	1, 5, 6, 8	They listen to a lecture and read literature. In the exercise classes, they calculate financial indicators and interpret the obtained results independently on a computer based on the financial statement of a business entity. They research the content of this thematic area and make a project assignment that presents the knowledge they have acquired and their ideas, and ways to solve problems.	At the colloquium or the written and oral exam they can define and describe the types / groups of financial indicators and apply them in the analysis of financial statements (in the exam and in the preparation of the project assignment). They know how to sketch and interpret Du Pont's indicator system and explain synthetic indicators. Created and presented project assignment (using computer programs).	14 hours
	159.	Rules and principles of financing, liquidity and solvency.	1, 5, 6, 8	They listen to a lecture and read literature. In the exercise classes, independently on a computer, they calculate financial indicators and interpret the obtained results based on the financial statements of a business entity.	At the colloquium or the written and oral exam they can define and describe the basic principles and rules of financing. They know how to explain the difference between the concepts of liquidity and solvency, explain the term financial leverage and judge when it is opportune to use it. They are able to identify internal and external causes of insolvency and propose measures to improve the solvency of companies. Created and presented project assignment (using computer programs).	10 hours
	160.	Short-term asset management.	1, 4, 8	They listen to a lecture and read literature. In the exercise classes, they calculate the value of working capital needed in the company.	At the colloquium or the written and oral exam they can define and describe the notion of working capital, permanent working capital, circular movement of working capital, factors on which the amount of working capital depends, management of working capital, inventory management and receivables management. They know how to analyze the structure of working capital and recommend the optimal size and structure of working capital in a particular company.	8 hours
	161.	Financial planning and methods of assessing the profitability of capital investments.	1, 7, 8	They listen to a lecture and read literature. In the exercise classes, independently on a computer, they apply the methods of capital investment assessment on an example of a financial statement of a business entity and interpret the results	At the colloquium or the written and oral exam they can explain the term financial planning, cash control instruments. They know how to define the term investment and classify investments, identify the common characteristics of all investment projects and explain why the sensitivity analysis of an investment project is done. They know how to explain commonly used methods of evaluating	14 hours

				obtained. They research the content of this thematic area and develop a project assignment that presents the knowledge they have acquired and their ideas, and ways to solve problems.	investment projects, apply them on an example, and make a decision on the profitability of investing in a particular project. Created and presented project assignment (using computer programs).	
	162.	Financial insurance and short term financing.	1, 3, 5, 8	They listen to a lecture and read literature.	At the colloquium or the written and oral exam they can state the types and forms of financing of the company according to the availability of sources, identify differences between credit and equity financing. They know how to explain the four methods and techniques of short-term bank lending, the relative advantages and disadvantages of bank loans, and the factors that determine the amount of trade credit from the point of view of the debtor and creditor.	8 hours
	163.	Mid-term and long-term financing - concepts and practical application.	1, 3, 5, 8	They listen to lectures and read literature, handle case studies.	At the colloquium or the written and oral exam they can define and describe the characteristics of medium and long-term credit. They can explain what leasing financing is (the concept and types of leasing, the advantages and disadvantages of leasing financing); identify differences between operating and financial leasing and recommend when to use what type of leasing.	8 hours
	164.	Equity financing.	1, 5, 8	They listen to a lecture and read literature.	At the colloquium or the written and oral exam they can determine the structure of the financial capital of a joint stock company, they can indicate own and external sources of equity of a joint stock company and explain the way of financing a business with own funds. They know how to explain the notion of non-nominal and nominal capital of a joint stock company, and evaluate the benefits of financing with own capital.	8 hours
	165.	Concluding Considerations / Repeating and Preparing for Exam.				48 hours

3. EVALUATION OF STUDENT WORK

3.1. Students` obligations	In accordance with the Book of Rules and the Rulebook on Student Assessment and Evaluation: for all regular students attend at least 70% attendance. Part-time students have the obligation to attend at least 50% of lectures. All students must create, present and positively colloquy seminar paper. Students who have during the course achieved: • From 0 – 24,9% ECTS credits- is rated F (unsuccessful) and cannot get ECTS credits and must re-enrol the subject in the next academic year; • From 25 – 49,9% ECTS credits - is rated FX (inadequate) and has to come out and pass the test (exam). A written exam can be held in a regular or extraordinary exam period; • More than 50% ECTS credits - students have the right to access the final exam of the subject.

	Students can pass the final exam in two ways: a) during the course through continuous student attendance (active participation in the lessons, solving case studies, making and presenting the project and passing two colloquia); b) during the course (active participation in the lessons, solving case studies, creating and presenting the project) and passing the exam (written and oral exam).

3.2. Monitoring student work (enter the share of ECTS credits for each activity so that the total number of ECTS points corresponds to the credit score of the course)						
	Attendance	1	Written exam	2,5 (by submitting both colloquiums the student is relieved of an written examination)	Project	0,5
	Experimental work		Research		Practical work	
	Essay		Report		Continuous examination	
	Colloquium	4,5 (by submitting both colloquiums the student is relieved of a written and oral examination)	Seminar paper		Other (inscribe)	
	Class activities		Oral exam	2 (by submitting both colloquiums the student is relieved of an oral examination)	Other (inscribe)	

3.3. Student workload

The student's workload on all bases amounts to 1 ECTS point for 30 hours of work per semester and is estimated as:

Commitment	***Hours (estimate)***
36. Attending classes	75
37. Creating and Project	15
38. Preparation for the Colloquium / exam through self-study	90

4. GRADING

4.1. Seminar paper grading

Valuation Element	**Poor**	**Satisfying**	**Above average**
Organization	The paper is not organized in a logical order and its structure is lacking.	The paper is well structured with a clear distinction between the introduction, the main part of the text and the conclusion.	The paper is well-structured with a clear distinction between the introduction, the main part of the text and the conclusions that are perfectly logically linked to one another
Terminology, writing style	Words and phrases are low harmonized with official terminology. Writing style is not appropriate, sentences are too long, modest vocabulary, and frequent and repeated grammatical mistakes.	Words and phrases are aligned with official terminology. The writing style is appropriate, the sentence structure is clear, the vocabulary is appropriate and has little grammatical errors.	Words and phrases are aligned with official terminology and show an understanding of their meaning. The writing style is excellent, the sentences are clear and concise, the vocabulary is rich and there are no grammatical errors.
Quoting and referencing	Sources are not specified at all. The references do not match the topic and show a superficial approach to the research topic.	Sources are listed, but incomplete and with errors. The references are appropriate for	Sources are accurate, complete and consistent. The references are appropriate,

			the subject and show a satisfactory research attitude.	their list is "rich" and comprehensive and shows a robust research approach.

4.2. Colloquium / exam grading	**Poor**	**Satisfying**	**Above average**
	Give answer by memory, no deeper understanding. Does not know and does not apply the basic terms and concepts. Cannot apply or explain the contents of the course.	Reproduces basic terms, without difficulty transfers new knowledge, understands subject matter, explains the terms and the notions that substantiate by examples.	Knowledge is at the level of analysis, synthesis and evaluation. It observes legitimacy, accurately and thoroughly explains the content of the subject, and logically links and explains the terms and concepts that it encapsulates. Find solutions that are not originally given. There is a correlation with correlative subjects.

4.3. Creating a final grade according to evaluation elements					
	Active participation in the lessons	70-75% of attendance	76-86% of attendance	87-100% of attendance	Solved case study.
		2 points	4 points	7 points	3 points
	Project	2	3	4	5
		5 points	7 points	8 points	10 points
	Colloquium / written exam	2	3	4	5
		50-64,9%	65-79,9%	80-89,9%	90-100%
		25 points	30 points	35 points	40 points
	Oral exam	2	3	5	5
		25 points	30 points	35 points	40 points

4.4. Creating a final grade according to absolute allocation	Percentage of adopted knowledge, skills and competences (teaching + final exam)	Numerous grade	ECTS grade
	90 – 100%	5 (excellent)	A
	80 – 89,9%	4 (very good)	B
	65 – 79,9%	3 (good)	C
	60 – 64,9%	2 (sufficient)	D
	50 – 59,9%	2 (sufficient)	E

5. ADDITIONAL INFORMATION ABOUT THE COURSE			
5.1. Compulsory literature (available in the library and through other media)	**Title**	**Number of copies in the library**	**Availability via other media**
	3. Brealley, R., Myers, S., Marcus, A. (2011). *Principles of Corporate Finance*. McGraw Hill, New York.		On line
	4. Van Horne, J. C., Wachowicz, J.M. (2009). *Fundamentals of Financial Management*. Prentice Hall		On line
5.2. Additional literature (at the moment of changes and/or amended of study programme)			
5.3. Quality assurance methods that ensure the acquisition of knowledge, skills and competences	The control of students' work quality and the acquisition of necessary knowledge and skills will be ensured through interactive work. By keeping track of attendance and student activity during classes and provided information on students` progress through short colloquiums and homework, information for further guidance to students will be provided in order to increase the efficiency of their work. Students will be informed about their rights and obligations as well as the methods of work and the required literature. Indicators of quality assurance system: Student survey, monitoring of annual data from the Croatian employment service on the annual state of student employment, surveys from employers and Alumni association.		
5.4. information on the course and contact with the teacher	It is obligatory for every student to regularly inform about the course, teaching and teaching activities. All information about teaching or any delay in teaching will be published on the e-learning pages of the course and on the web pages of the Polytechnic. Students can contact the teachers during the consultation term (at least one hour per week), while brief questions and explanations can be addressed during classes. It is possible to ask questions by e-mail (from the official e-mail address from the domain @ vus.hr) that will be answered in a short time (no later than five working days from the receipt of e-mail).		

VI. SEMESTER

1. GENERAL INFORMATION ABOUT THE SUBJECT			
1.1. Title	**Project management**	1.8. ISVU course code	
1.2. Lecturer	mr.sc. Darko Jureković, sen.lecturer	1.9. MOZVAG course code	
1.3. Assistants and/or associates	-	1.10. Forms of teaching (number of hours P+V+S+e-learning)	(30+30+0+0)
1.4. Study programme (professional, specialist, undergraduate, graduate)	**Undergraduate professional study of Business Informatics**	1.11. Level of application of e-learning (level 1,2,3), percentage of online course performance (max. 20%)	Level 3 - materials available online, taking preliminary exams and a final written exam on a computer 0%
1.5. Course status (mandatory, elective)	mandatory	1.12. Number of course revisions	1
1.6. Study year	3	1.13 Modernization	■yes no
1.7. Credit score (ECTS)	4	1.14. Percentage estimate of course changes and/or supplements	Less than 20% More than 20% of □

2. COURSE DESCRIPTION	
2.1. Coourse objectives	To introduce students to the basic methodological approach to project management by engaging during the study of acquired knowledge (management of goals, costs, time, people, quality, procurement, risks) and new techniques, specific to project work
2.2. Terms of course entry and required competences	Completed four-year secondary education; possession of a qualification at level 4.2 according to the Croatian Qualification Framework

2.3. Learning outcomes on the study programme level	IU9 to apply relevant professional literature in Croatian and foreign language, prepare and independently present presentations in Croatian and foreign language for professional and general public, and critically evaluate presented professional topics IU12 to apply key aspects of information technology (programming, algorithms, data structures, databases, and project management in the field of information technology) IU15 to compare and select appropriate development tools at professional level IU17 To conclude what the basic principles and methods of quality project management are and work successfully in a team

2.4. Expected learning outcomes on the course level	**Learning outcomes** towards Bloom's taxonomy: (up to two verbs per LO)	**LO Level:** *1. Recapture,* *2. Understanding,* *3. Application,* *4. Analysis,* *5. Evaluation,* *6. Synthesis*
	1. To know the basic theoretical knowledge in the field of project management	1,2,3,4,5,6
	2. Argue different types of projects	2,3,4,5,6
	3. Identify the lifecycle phases of projects	2,3,4,5,6
	4. Evaluate the role of individual elements of the project system	2,3,4,5,6
	5. Identify and argue the connection of projects with continuous processes and justify the project as a process of achieving the goals.	2,3,4,5,6
	6. Compare different types of projects and explain project lifecycle phases with immediate and indirect economic impacts	2,3,4,5,6

2.5. The contents of the course are elaborated in detail according to the hourly teaching

Constructive alignment

No:	Thematic ensemble / Lecture Topic	Course LO	Content / Teaching method	Evaluation	Time needed
1.	Introduction to project management - organisation of courses/subjects and implementation of teaching.	-	Students listen to the lecture.	-	2 hours
	The beginnings of project management, what we can learn from history, and an overview of available learning content. Understanding concepts: project and project management.	1	Students listen to lectures, they work on a computer, they read literature.	Describe important concepts: project and project/project management.	8 hours
2.	Understanding concepts: methodology, standards, Body of Knowledge, PMBOK and PMI.	1,2,3,4	Students listen to a lecture, they work on a computer, they read literature	Explain important concepts in the field of project management according to methodology and standards: Body of Knowledge, PMBOK and PMI.	10 a.m.

	3.	Understanding concepts: program and portfolio. Distinguishing between goals and deliveries, understanding the term "project scope".	1,2,3	They listen to a lecture, they work on a computer, they read literature	Understanding concepts: program and portfolio. Distinguish the goals and delivery of the project. Explain the term "project scope".	10 a.m.
	4.	Understanding concepts: resources, stakeholders and project roles. The role of project manager.	1,2,3,4	They listen to a lecture, they work on a computer, they read literature	Explain concepts: resources, stakeholders and roles on the project. Explain the role of project manager.	10 a.m.
	5.	Classic and agile approaches to project management. The specificities and specificities of projects in the IT sector.	1,2,3,4,5,6	They listen to a lecture, they work on a computer, they read literature	Evaluate the classic and agile approach of project management. Explain the specificities and specificities of projects in the IT sector.	10 a.m.
	6.	The life cycle of the project and the process view of the project. Forms of organizational structures and projects in different organizations.	1,2,3,4,5,6	They listen to a lecture, they work on a computer, they read literature	Explain the life cycle of the project and the process view of the project. List the forms of organizational structures and projects in different organizations.	10 a.m.
	7.	What is the success of the project? Tips for more successful implementation of projects.	3,4,5,6	They listen to a lecture, they work on a computer, they read literature	Evaluate a successful project.	10 a.m.
	8.	Project launch and project charter. Introduction to project planning.	3,4,5,6	They listen to a lecture, they work on a computer, they read literature	Describe the launch of the project and the charter of the project. Explain the phase of the introduction into project planning.	10 a.m.
	9.	Scope planning and WBS (structural breakdown). Network diagram and project timeline.	1,2,3,4,5,6,	They listen to a lecture, they work on a computer, they read literature	Plan the scope and WBS (structural breakdown) on the example of a simple project. Create a network diagram and a timeline of the example of a simple project.	10 a.m.
	10.	Creating a project budget. Planning a purchase on a project. Project implementation and monitoring/monitoring of performance.	1,2,3,4,5,6	They listen to a lecture, they work on a computer, they read literature	Create a project budget based on the example given. A procurement planner on the project. Explain project monitoring and monitoring procedures.	10 a.m.
	11.	Analysis of acquired value. Quality control. Reporting on the project.	1,2,3,4,5,6	They listen to lectures, they work on a computer, they read literature.	Control of the quality of the project. Create default reports on the example of a simple project.	10 a.m.
	12.	Managing stakeholders and teams. Conflict management.	1,2,3,4,5,6	They listen to a lecture, they work on a computer, they read literature	Describe the procedures for managing stakeholders on the project and project teams. Describe the procedures for managing conflicts on the project.	10 a.m.
	13.	Risk management.	1,2,3,4,5,6	They listen to a lecture, they work on a computer, they read literature	Assess the risks on the example project and draw up a risk management plan.	10 a.m.
	14.	Closing the project. Documenting lessons learned. Project management	1,2,3,4,5,6	They listen to a lecture, they work on a computer, they read literature	Use the Oracle Primavera project management tool.	10 a.m.

		tools: An overview of software tools for project management and the markets/industries in which they are used.				
	15.	Project management as a profession – professional development, certification opportunities and careers in the field of project management. Analysis of case studies.	1,2,3,4,5,6	They listen to a lecture, work on a computer, read literature, individually prepare for the exam	Analyze professional development opportunities in the field of project management. Create and present a default case analysis.	10 a.m.

3. EVALUATION OF STUDENT WORK

3.1. Students` obligations

In accordance with ***the Ordinance on Study*** and ***the Ordinance on evaluation and evaluation of student work***: for all full-time students, attendance at a minimum of 70% in class. Part-time students have an obligation to attend lecture classes at least 50%. All students must create, present and positively colloquiate the seminar paper.
Students who have achieved during class:

- From 0-24.9% of ECTS credits- they are rated F (unsuccessful) and cannot earn ECTS credits, and must re-enter the subject in the next academic year;
- From 25 - 49.9% - they are rated FX (insufficient) and must come out and pass a written exam (test). A written exam (test) may be held within a regular or extraordinary examination period;
- More than 50% - students have the right to access the final exam of the subject.

Students can pass the final exam in the course in two ways: a) during class through continuous monitoring of students (active participation in classes and exercises and two colloquiums); b) during classes (active participation in classes and exercises) and by taking exams (written and oral part of the exam).

3.2. Monitoring student work (enter the share of ECTS credits for each activity so that the total number of ECTS points corresponds to the credit score of the course)

Attendance	1	Written exam	1 (no colloquiums)	Project	
Experimental work		Research		Practical work	1
Essay		Report		Continuous verification	
Colloquium	2 (no written and oral exam)	Seminar paper		(other type)	
Teaching activities		Oral exam	1 (no colloquiums)	(other type)	

3.3. Student workload

The student's workload on all grounds is for 1 ECTS point 30 hours of work per semester and is estimated as:

Obligation	***Hours (estimate)***
1. Attendance	60
2. Practical work on exercises	30
3. Preparation for colloquium/exam through independent learning	30

4. GRADING

4.1. Evaluation of the seminar paper

Valuation Element	Poor	Satisfying	Above average
Organization			
Terminology, writing style			
Quoting and listing references			

4.2. Evaluation of colloquiums / written and oral part of exams

Poor	Satisfying	Above average
The student fits from memory, without a deeper understanding. The student does not know or apply basic terms and concepts. The student does not know how to apply or explain by example the content of the course.	The student reproduces basic concepts and seamlessly transfers new knowledge, understands the material, explains the terms and concepts he/she substantiates with examples.	Knowledge is at the level of analysis, synthesis and evaluation. The student perceives legalities, accurately and thoroughly explains the content of the material and logically connects and explains the terms and concepts it substantiates with examples. The student finds solutions that were not originally given. The student notices correlations with related material.

4.3. Creating a final grade according to evaluation elements

Active attendance	70-75% attendance	76-86% attendance	87-100% attendance	
	4 points	7 points	10 points	
Exercises	2	3	4	5
	5 points	7 points	8 points	10 points
Colloquium / Written exam	2	3	4	5
	50-64,9%	65-79,9%	80-89,9%	90-100%
	25 points	30 points	35 points	40 points
Oral exam	2	3	5	5
	25 points	30 points	35 points	40 points

4.4. Formation of the final assessment on the basis of absolute distribution

Percentage of adopted knowledge, skills and competences adopted (teaching + final exam)	Numerical grade	ECTS grade
90 – 100%	5 (excellent)	A
80 – 89,9%	4 (very good)	B
65 – 79,9%	3 (good)	C
60 – 64,9%	2 (sufficient)	D
50 – 59,9%	2 (sufficient)	E

5. ADDITIONAL INFORMATION ON THE CASE			
5.1. Compulsory literature (available in the library and through other media)	Title	Number of copies in the library	Availability via media
	1. Peer-reviewed teaching materials in the subject, available on the e-learning system		Available online
5.2. Additional literature (at the moment of changes and/or amended of study programme)	1. PMBOK, 6th edition 2. PMBOK, translation of the 4th edition into Croatian 3. Mislav Ante Omazić, Stipe Baljkas; Project management 4. Harold Kerzner; Project Management: A Systems Approach to Planning, Scheduling, and Controlling (12th edition)	5	
5.3. Quality assurance methods that ensure the acquisition of knowledge, skills and competences	Control of the quality of work of students and the acquisition of the necessary knowledge and skills will be ensured through interactive work. Keeping records of student attendance and activities in teaching and obtaining information about student progress through colloquiums will provide the information necessary for further instructions to students in order to increase the efficiency of their work. Students will be informed about their rights and obligations and working methods and the necessary literature. Quality assurance system indicators: Student survey, monitoring of annual data from the HZZZ on the annual employment status of students, surveys of employers and alumni associations.		
5.4. Information on the course and contact with the teacher	It is the obligation of each student to be regularly informed about the course, the conduct of classes and the activities in class. All notices about teaching or possible postponement of classes will be published in a timely manner on the e-learning pages of the course and on the website of the Polytechnic. Students can contact teachers during the consultation period (at least one hour per week), while for short questions and explanations they can be contacted during class. It is also possible to ask questions by e-mail (from the official e-mail address on the domain @vus.hr) to which they will be answered in the shortest possible time (no later than five working days after receiving the e-mail).		

1. GENERAL INFORMATION ABOUT THE SUBJECT			
1.1. Title	**Development of Web Applications**	1.8. ISVU course code	
1.2. Lecturer	Milan Hrga M.Eng., lecturer	1.9. MOZVAG course code	
1.3. Assistants and/or associates		1.10. Forms of teaching (number of hours Lecturing +Practical exercises + Seminars + e learning)	(30+30+0+0)
1.4. Study programme (specialist, undergraduate, graduate)	**Undergraduate Professional Study of Business informatics**	1.11. Level of e- learning application (1st, 2nd, 3rd level), percentage of on line course performance (max. 20%)	3rd – course materials available online, taking colloquium and written exam on a computer, 0%
1.5. Course status (mandatory, elective)	Elective	1.12. Number of course revisions	2.
1.6. Study year	3rd	1.13. Modernization	■ yes □ no
1.7. Credit score (ECTS)	4	1.14. Percentage estimate of course changes and/or supplements	Less than 20% ■ More than 20 % □

2. COURSE DESCRIPTION	
2.1. Course objectives	Prepare students for independent web application development.
2.2. Terms of course entry and required competences	Completed a four-year high school education; possession of a qualification at level 4.2 according to the CROQF.

2.3. Learning outcomes on the study programme level	IU3: Evaluate database design according to business requirements. IU9: Select appropriate professional literature in Croatian and foreign language, prepare and independently hold presentations in Croatian and foreign language to professional and general audiences, and critically evaluate presented professional topics. IU12: Apply key aspects of information technology (programming, algorithms, data structures, databases and project management in the field of information technology). IU15: Compare and select appropriate development tools at the professional level.	
2.4. Expected learning outcomes on the course level	**Learning outcomes** towards Bloom's taxonomy: (up to wo verbs per LO)	**LO Level:** *61. Recapture,* *62. Understanding,* *63. Application,* *64. Analysis,* *65. Evaluation,* 66. *Synthesis*
	1. Use Oracle Application Express development tool.	1,2,3,4,5,6
	2. Develop a database-based web application.	2,3,4,5,6
	3. Evaluate the possibilities of using the Oracle Application Express platform in Oracle cloud.	2,3,4,5,6
	4. Invoking Web Services and store data locally.	2,3,4,5,6
	5. Develop a complex graphical user interface using built-in tools and components, and customize it for all targeted mobile platforms and devices.	2,3,4,5,6
	6. Apply architecture patterns of a web application.	2,3,4,5,6

2.5. Course content according to detailed curriculum schedule

Constructive alignment

No:	Thematic ensemble / Lecture Topic	Course LO	Content / Teaching Method	Evaluation	Time needed
166.	Introduction to the course and detailed curriculum	-	Listen to lectures.	-	2 hours
	Introduction to Oracle Application Express web application architecture	1	Listen to lectures, working on computer and read literature.	Describe essential web standards in the context of historical development. Explain the basics of Oracle Application Express platform and web application architecture.	8 hours
167.	Basic elements of the graphical user interface	1,2,3,4,5,6	Listen to lectures, working on computer and read literature.	Explain the basic elements of the Oracle Application Express graphical user interface. Create a simple graphical user interface.	10 hours
168.	Data Access	1,2,3,4,5,6	Listen to lectures, working on computer and read literature.	Use SQL Workshop tool	10 hours
169.	Data Access	1,2,3,4,5,6	Listen to lectures, working on computer and read literature.	Provide access to data stored in the database.	10 hours
170.	Management of content and parts of the application	1,2,3,4,5,6	Listen to lectures, working on computer and read literature.	Use the Page Designer tool.	10 hours

	171.	Web application security	1,2,3,4,5,6	Listen to lectures, working on computer and read literature.	Configure access control for individual parts of the application.	10 hours
	172.	Creating report	1,2,3,4,5,6	Listen to lectures, working on computer and read literature.	Describe basic types of reports.	10 hours
	173.	Creating report	1,2,3,4,5,6	Listen to lectures, working on computer and read literature.	Create different reports and link them to a database.	10 hours
	174.	User forms	1,2,3,4,5,6	Listen to lectures, working on computer and read literature.	Describe the basic types of user forms for data entry and display.	10 hours
	175.	User forms	1,2,3,4,5,6	Listen to lectures, working on computer and read literature.	Create different user forms for data entry and display and link them to a database.	10 hours
	176.	Web application navigation	1,2,3,4,5,6	Listen to lectures, working on computer and read literature.	Program the components used for navigation through the application.	10 hours
	177.	Event management	1,2,3,4,5,6	Listen to lectures, working on computer and read literature.	Program events that occur as a result of user actions.	10 hours
	178.	Advanced graphical user interface elements	1,2,3,4,5,6	Listen to lectures, working on computer and read literature.	Embed advanced graphical interface elements (Oracle JET Charts, Calendars).	10 hours
	179.	Advanced graphical user interface elements	1,2,3,4,5,6	Listen to lectures, working on computer and read literature.	Embed advanced graphical interface elements (Trees).	10 hours
	180.	Distribution of completed web application	1,2,3,4,5,6	Listen to lectures, working on computer, read literature and prepare for the exam individually.	Enable web application in Oracle cloud.	10 hours

3. EVALUATION OF STUDENT WORK

3.1. Students` obligations

3.2. Monitoring student work (enter the share of ECTS credits for each activity so that the total number of ECTS points corresponds to the credit score of the course)

Attendance	1	Written exam	1 (without colloquia)	Project	
Experimental work		Research		Practical work	1
Essay		Report		Continuous examination	
Colloquium	2 (without written and oral exam)	Seminar paper		Other (inscribe)	
Class activities		Oral exam	1 (without colloquia)	Other (inscribe)	

3.3. Student workload

The student's workload on all bases amounts to 1 ECTS point for 30 hours of work per semester and is estimated as:

Commitment	***Hours (estimate)***

	39. Attending classes	60
	40. Practical work	30
	41. Preparation for the Colloquium / exam through self-study	30

4. GRADING

4.1. Seminar paper grading

4.2. Colloquium / exam grading

Unsatisfactory	Satisfactory	Above average
Responds by memory, without a deeper understanding. Does not know or apply basic terms and concepts. Does not know how to apply or explain the contents of the course with examples.	Reproduces the basic concepts and without difficulty imparts new knowledge, understands the material, explains the terms and concepts supported with examples.	Knowledge is at the level of analysis, synthesis and evaluation. Observes the principles, accurately and thoroughly explains the content of the material, and logically connects and explains the terms and concepts supported with examples. Finds solutions that were not originally given. Notes correlations with related material.

4.3. Creating a final grade according to evaluation elements

Active participation in the lessons	70-75% of attendance	76-86% of attendance	87-100% of attendance	Created mental map. Solved case study.
	4 points	7 points	10 points	
Seminar paper	2	3	4	5
	5 points	7 points	8 points	10 points
Colloquium / written exam	2	3	4	5
	50-64,9%	65-79,9%	80-89,9%	90-100%
	25 points	30 points	35 points	40 points
Oral exam	2	3	5	5
	25 points	30 points	35 points	40 points

4.4. Creating a final grade according to absolute allocation

Percentage of adopted knowledge, skills and competences (teaching + final exam)	Numerous grade	ECTS grade
90 – 100%	5 (excellent)	A
80 – 89,9%	4 (very good)	B
65 – 79,9%	3 (good)	C
60 – 64,9%	2 (sufficient)	D
50 – 59,9%	2 (sufficient)	E

5. ADDITIONAL INFORMATION ABOUT THE COURSE			
5.1. Compulsory literature (available in the library and through other media)	**Title**	**Number of copies in the library**	**Availability via other media**
	1. Reviewed course materials available on the e-learning system		Available online
	2. Oracle Corporation, Oracle Application Express – Application Development Foundations		Available online
5.2. Additional literature (at the moment of changes and/or amended of study programme)	1. Patrick Cimolini, Oracle Application Express by Design, Apress, 2017	5	
5.3. Quality assurance methods that ensure the acquisition of knowledge, skills and competences	The control of students' work quality and the acquisition of necessary knowledge and skills will be ensured through interactive work. By keeping track of attendance and student activity during classes and provided information on students` progress through short colloquiums and homework, information for further guidance to students will be provided in order to increase the efficiency of their work. Students will be informed about their rights and obligations as well as the methods of work and the required literature. Indicators of quality assurance system: Student survey, monitoring of annual data from the Croatian employment service on the annual state of student employment, surveys from employers and Alumni association.		
5.4. information on the course and contact with the teacher	It is the responsibility of each student to be regularly informed about the course, the coursework, and the classroom activities. All notices of classes or possible adjournment will be published in a timely manner on the e-learning site of the course and on the website of the Polytechnic. Students can contact teachers during the consultation period (at least one hour per week), while for short questions and explanations they can be contacted during class. It is also possible to ask questions by e-mail (from the official e-mail address at @ vus.hr), which will be answered as soon as possible (no later than five working days after receiving the e-mail).		

1. GENERAL INFORMATION ON THE CASE			
1.1. Case name	**Cloud computing**	1.8. Course code in ISVU	
1.2. Case holders	PhD. Frane Urem, college prof.	1.9. Course code in MOZVAG	
1.3. Associates	mr.sc. Darko Jureković., sen.lecturer	1.10. Teaching method (number of hours P+V+S+e-learning)	(30+30+0+0)
1.4. Study programme (professional, specialist graduate professional study programme)	**Undergraduate professional study of Business Informatics**	1.11. Level of application of e-learning (level 1,2,3), Percentage of courses online (max. 20%)	Level 3 - materials available Online, taking colloquiums and written exams on a computer 0%
1.5. Course status (mandatory,elective)	Elective	1.12. Sequence number of amendments to the college description	2.
1.6. Year of study	Year 3 of Study	1.13 Modernization	■ not to□
1.7. Points Value (ECTS)	4	1.14. Estimate of the percentage of amendments and/or amendments course program	Less than 20% ■ More than 20% of □

2. COURSE DESCRIPTION	
2.1. Course objectives	Prepare students for independent use of services available in the computer cloud.
2.2. Terms of course entry and required competences	Completed four-year secondary education; possession of a qualification at level 4.2 according to the Croatian Chamber of Economy.
2.3. Learning outcomes on the study programme level	IU9 to apply relevant professional literature in Croatian and foreign language, prepare and independently present presentations in Croatian and foreign language for professional and general public, and critically evaluate presented professional topics IU12. to apply key aspects of information technology (programming, algorithms, data structures, databases, and project management in the field of information technology) IU15. to compare and select appropriate development tools at professional level

2.4. Expected learning outcomes on the course level	**Learning outcomes** according to Bloom's taxonomy: *(up to two verbs per IU)*	**LO Level:** *1. Recapture,* *2. Understanding,* *3. Application,* *4. Analysis,* *5. Evaluation,* *6. Synthesis*
	1. Identify computer cloud features	1,2,3,4,5,6
	2. Explain the main services in the computer cloud	2,3,4,5,6
	3. Configure and use a database in a computer cloud	2,3,4,5,6
	4. Analyze large amounts of data in the computer cloud	2,3,4,5,6
	5. Evaluate the performance of individual computer cloud services	2,3,4,5,6
	6. Rate the characteristics of the selected computer cloud	2,3,4,5,6

2.5. Course content according to detailed curriculum schedule

Constructive alignment

No.	Thematic unit	IU courses	Teaching content/method	Evaluation	Time taken
	Introduction to the course and detailed performance plan of teaching.	-	They're listening to the lecture.	-	2 hours
	Introduction to computer cloud architecture - Introduction to Oracle Cloud infrastructure.	1	They listen to lectures, they work on a computer, they read literature.	Describe essential web standards in the context of historical development Interpret the basics of computer cloud architecture and Oracle Cloud infrastructure	8 hours
2.	Oracle Cloud Console Basic Elements	1,2,3,4	They listen to a lecture, they work on a computer, they read literature	Explain the basic parts of the interface for accessing and configuring Oracle Cloud services.	10 a.m.
3.	Infrastructure as a service, virtual infrastructure.	1,2,3	They listen to a lecture, they work on a computer, they read literature	Configure and install a Linux server in the Oracle cloud. Install web services on a virtual Linux server.	10 a.m.
4.	Network infrastructure management, resource load management.	1,2,3,4	They listen to a lecture, they work on a computer, they read literature	Use and configure Virtual Cloud Networks and Load Balancer services.	10 a.m.
5.	Security and storage of cloud data.	1,2,3,4,5,6	They listen to a lecture, they work on a computer, they read literature	Use and configure Object Storage services.	10 a.m.
6.	Cloud databases.	1,2,3,4,5,6	They listen to a lecture, they work on a computer, they read literature	Use and configure an autonomous database in the Oracle cloud. Use and configure autonomous databases by using SQL Developer tools.	10 a.m.

	7.	Cloud Development Tools	3,4,5,6	They listen to a lecture, they work on a computer, they read literature	Create a simple web application that uses an Oracle autonomous database. Use the Oracle APEX development tool.	10 a.m.
	8.	Cloud Development Tools	3,4,5,6	They listen to a lecture, they work on a computer, they read literature	Create a simple web application that uses an Oracle autonomous database. Use the Oracle APEX development tool.	10 a.m.
	9.	Machine learning services	1,2,3,4,5,6,	They listen to a lecture, they work on a computer, they read literature	Use and configure the Autonomous Data Warehouse service. Use and configure machine learning notebook service.	10 a.m.
	10.	Services for analyzing a larger amount of data.	1,2,3,4,5,6	They listen to a lecture, they work on a computer, they read literature	Use and configure the Data Analytics service.	10 a.m.
	11.	Services for analyzing a larger amount of data.	1,2,3,4,5,6	They listen to lectures, they work on a computer, they read literature.	Use and configure the Data Analytics service.	10 a.m.
	12.	AI services.	1,2,3,4,5,6	They listen to a lecture, they work on a computer, they read literature	Use and configure the Digital Assant service.	10 a.m.
	13.	AI services.	1,2,3,4,5,6	They listen to a lecture, they work on a computer, they read literature	Use and configure the Digital Assant service.	10 a.m.
	14.	Messaging services.	1,2,3,4,5,6	They listen to a lecture, they work on a computer, they read literature	Use and configure the Oracle User Messaging service.	10 a.m.
	15.	Data security in the computer cloud	1,2,3,4,5,6	They listen to a lecture, work on a computer, read literature, individually prepare for the exam	Configure security settings for data stored about the Oracle cloud.	10 a.m.

3. EVALUATION OF THE STUDENT WORK

3.1. Students` obligations

In accordance with ***the Ordinance on Study*** and ***the Ordinance on evaluation and evaluation of student work***: for all full-time students, attendance at a minimum of 70% in class. Part-time students have an obligation to attend lecture classes at least 50%. All students must create, present and positively colloquiate the seminar paper.
Students who have achieved during class:

- From 0-24.9% of ECTS credits- they are rated F (unsuccessful) and cannot earn ECTS credits, and must re-enter the subject in the next academic year;
- From 25 - 49.9% - they are rated FX (insufficient) and must come out and pass a written exam (test). A written exam (test) may be held within a regular or extraordinary examination period;
- More than 50% - students have the right to access the final exam of the subject.

Students can pass the final exam in the course in two ways: a) during class through continuous monitoring of students (active participation in classes and exercises and two colloquiums); b) during classes (active participation in classes and exercises) and by taking exams (written and oral part of the exam).

3.2. Monitoring student work (enter the share of ECTS credits for each activity so that the total number of ECTS points corresponds to the credit score of the course)

Attendance	1	Written exam	1 (no colloquiums)	Project	
Experimental work		Research		Practical work	1
Assay		Report		Continuous verification	
Colloquiums	2 (no written and oral exam)	Seminar paper		(other type)	
Teaching activities		Viva voce	1 (no colloquiums)	(other type)	

3.3. Student workload	The student's workload on all grounds is for 1 ECTS point 30 hours of work per semester and is estimated as:

	Obligation	***Hours (estimate)***
1.	Attendance	60
2.	Practical work on exercises	30
3.	Preparation for colloquium/exam through independent learning	30

4. FORMATION OF THE RATING

4.1. Seminar paper grading

4.2. Colloquium / exam grading

Poor	**Satisfying**	**Above average**
The student fits from memory, without a deeper understanding. The student does not know or apply basic terms and concepts. The student does not know how to apply or explain by example the content of the course.	The student reproduces basic concepts and seamlessly transfers new knowledge, understands the material, explains the terms and concepts he/she substantiates with examples.	Knowledge is at the level of analysis, synthesis and evaluation. The student perceives legalities, accurately and thoroughly explains the content of the material and logically connects and explains the terms and concepts it substantiates with examples. The student finds solutions that were not originally given. The student notices correlations with related material.

4.3. Creating a final grade according to evaluation elements

Active attendance	70-75% attendance	76-86% attendance	87-100% attendance	
	4 points	7 points	10 points	
Exercises	2	3	4	5
	5 points	7 points	8 points	10 points
Colloquium / Written exam	2	3	4	5
	50-64,9%	65-79,9%	80-89,9%	90-100%
	25 points	30 points	35 points	40 points
Oral exam	2	3	5	5
	25 points	30 points	35 points	40 points

4.4. Creating a final grade according to absolute allocation

Percentage of knowledge, skills and competences adopted (teaching + final exam)	Numerical rating	ECTS rating
90 – 100%	5 (excellent)	And
80 – 89,9%	4 (very good)	B
65 – 79,9%	3 (good)	C

		60 – 64,9%	2 (enough)	D	
		50 – 59,9%	2 (enough)	E	

5. ADDITIONAL INFORMATION ON THE CASE

	Title	Number of copies in the library	Availability through other media
5.1. Compulsory literature (available in the library and through other media)	1. Peer-reviewed teaching materials in the subject, available on the e-learning system		Available online
	2. Oracle Academy Member Hub portal teaching materials		Available online
5.2. Additional literature (at the moment of changes and/or amended of study programme)	1. R. Ramklass , Oracle Cloud Infrastructure Architect Associate All-In-One Exam Guide (Exam 1Z0-1072), McGraw Hill, 2020	5	
5.3. Quality assurance methods that ensure the acquisition of knowledge, skills and competences	Control of the quality of work of students and the acquisition of the necessary knowledge and skills will be ensured through interactive work. Keeping records of student attendance and activities in teaching and obtaining information about student progress through colloquiums will provide the information necessary for further instructions to students in order to increase the efficiency of their work. Students will be informed about their rights and obligations and working methods and the necessary literature. Quality assurance system indicators: Student survey, monitoring of annual data from the HZZZ on the annual employment status of students, surveys of employers and alumni associations.		
5.4. Information on the course and contacting the teacher	It is the obligation of each student to be regularly informed about the course, the conduct of classes and the activities in class. All notices about teaching or possible postponement of classes will be published in a timely manner on the e-learning pages of the course and on the website of the Polytechnic. Students can contact teachers during the consultation period (at least one hour per week), while for short questions and explanations they can be contacted during class. It is also possible to ask questions by e-mail (from the official e-mail address on the domain @vus.hr) to which they will be answered in the shortest possible time (no later than five working days after receiving the e-mail).		

1. GENERAL INFORMATION			
1.1. Course lecturer	Ivan Livaja	1.7. Credit score (ECTS)	12
1.2. Course title	**PROFESSIONAL PRACTICE**	1.8. Forms of teaching (number of hours Lecturing +Practical exercises + Seminars + elearning)	360
1.3. Assistants and/or associates	Zvonimir Klarin,	1.9. Level of e- learning application (1st, 2nd, 3rd level), percentage of on line course performance (max. 20%)	1stlevel
1.4. Study programme (specialist, undergraduate, graduate)	**Professional Undergraduate Study of Business Informatics**	1.10. Number of course revisions	second
1.5. Course status (mandatory, elective)	Mandatory	1.11.Modernization	yes
1.6. Year of study	3rd	1.12. Percentage estimate of course changes and/or supplements	**Less than 20%** □ More than 20 % □

2. COURSE DESCRIPTION	
2.1. Course objectives	The basic goal of student practice is gaining professional experience in the field of Informatic Management . Student practice will further enable students to: • adaptation to thework in genvironment; • linking theoretic alknowledge and practicale xperience; • Orientation to future employment; - Strengthe ningthe links between the Polytechnic in Sibenik and companies where students conduct professional practice - feedback about knowledge and skills that the present labormarket expects, with the aim of improving the teaching process
2.2. Terms of course entry and required competences	All courses must be attended before the beginning of professional training
2.3. Learning outcomes on the study programme level	- forming a sense of responsibility and motivation for the execution of assigned jobs. - creating the necessary social feelings for teamwork - verification of learned knowledge and acquired skills in specific situations - acquiring the practice of reporting, consulting and managing business - describing the system of interdependencies between the jobs and responsibilities of employees in the company or the IT department - describing the methods of job scheduling, - describing the methods of task assignment, and application of task-solving technology

<table>
<tr><td></td><td colspan="6">- describing the content and equipment of workshops / services / systems
- listing tasks that include:
preventive maintenance of information systems (daily, monthly and yearly)
- describing the procedures of work and communication between the company and the client (or department within the company) in order to increase the efficiency of the business, eliminate the failures and minimize them in the future
- describing the process of coordination of classification and disposal of equipment, technological / technical and other waste in accordance with legal regulations
- describing the procedure for reporting all the business / client queries and failures
- verifying acquired knowledge in the field of programming languages and data modeling andprocess in specific circumstances
- interpreting the methodologies and basic principles for the development and construction of the site
- application of database systems with the ability to form, edit and maintain relational and object-oriented databases
- interpret data flow control mechanisms, error control, data transfer methods using network routing methods, apply LAN technology
- describing and applying the most common techniques of information systems protection with knowledge of legal framework for information and computer security</td></tr>
<tr><td>2.4. Expected learning outcomes on the course level</td><td colspan="6">Following completion of this practice, students will adopt and apply basic professional knowledge about ways and processes of department and sector in the enterprise, which implies different processes of planning (finance, enterprise development, new product development), organization (definition of organizational structures), leadership (projects, people), control (financial resources, human resources).</td></tr>
<tr><td>2.5. Course content according to detailed curriculum schedule</td><td colspan="6">/</td></tr>
<tr><td rowspan="2">2.6. Teaching methods</td><td colspan="2">□ lectures
□ seminars and workshops
□ practical exercises
□ distance education
□ mixed e-learning
□ field teaching</td><td colspan="2">□ independent tasks
□ multimedia and network
□ laboratory
□ mentoring
□ other</td><td colspan="2">2.7. Comments:</td></tr>
<tr><td colspan="4"></td><td colspan="2"></td></tr>
<tr><td>2.8. Students` obligations</td><td colspan="6">In accordance with the signed Agreement of professional cooperation between the Polytechnic of Šibenik and the company, the student is obliged to undertake a professional practice in an appropriate time period (this practice is compulsory for all regular and extraordinary students). Students who are employed in informatic-related companies and / or work at an operational or tactical level of management are exempted from doing this practice, and they must provide a copy of the employment contract as proof of employment. The student is obliged to conduct the Diary of work in which he write the names of the professional processes (exercises or tasks) he has performed every day.</td></tr>
<tr><td rowspan="6">2.9. Monitoring student work (enter the share of ECTS credits for each activity so that the total number of ECTS points corresponds to the credit score of the course)</td><td>Attendance</td><td></td><td>Written exam</td><td></td><td>Project</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Research</td><td></td><td>Practical work</td><td>8</td></tr>
<tr><td>Essay</td><td></td><td>Report</td><td>1</td><td>Continuous examination</td><td></td></tr>
<tr><td>Colloquium</td><td></td><td>Seminar paper</td><td></td><td>Other</td><td></td></tr>
<tr><td>Class activity</td><td></td><td>Oral exam</td><td></td><td>Other</td><td></td></tr>
<tr><td>2.10. Grading and evaluating students` work during classes and on the exam</td><td colspan="6">When conducting a professional practice, a student is obliged to lead and write a Diary work on completed tasks / exercises. Student anticipates in advance the time of the Diary work, at the course lecturer. The lecturer of the course evaluates the work journal and then writes the student to the student index, satisfied or not satisfied. In the case of not satisfied, the student is obligated to correct the Diary of work, and come back for review.</td></tr>
</table>

2.11. Compulsory literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**
2.12. Additional literature (at the moment of changes and/or amended of study programme)			
2.13. Quality assurance methods that ensure the acquisition of knowledge, skills and competences	The control of students' work quality and the acquisition of necessary knowledge and skills will be ensured through interactive work. By keeping track of attendance and student activity during classes and provided information on students` progress through short colloquiums and homework, information for further guidance to students will be provided in order to increase the efficiency of their work. Students will be informed about their rights and obligations as well as the methods of work and the required literature. Indicators of quality assurance system: Student survey, monitoring of annual data from the Croatian employment service on the annual state of student employment, surveys from employers and Alumni association.		

LEARNING OUTCAMS MATRIX OF UNDERGRADUATE PROFESSIONAL STUDY
BUSINESS INFORMATICS IN ACADEMIC YEAR 2020./2021.

LEARNING OUTCOMES	M/E	I1	I2	I3	I4	I5	I6	I7	I8	I9	I10	I11	I12	I13	I14	I15	I16	I17	Learn.outc. per course
Principles of economics	M						+			+					+				3
Financial mathematics	M	+	+				+	+											4
Computer application in office automation	M	+	+											+	+				4
Programming fundamentals	M									+			+			+			3
Introduction to computer science	M	+	+			+				+		+	+			+			7
English for information technology I	M						+			+					+				3
Business communication	M									+					+			+	3
Principles of microeconomics	M						+			+							+		3
Computer architecture	M	+	+							+				+				+	5
Introduction to web technologies	M				+	+				+			+			+			5
Information technologies and environmental protection	M	+								+	+								3
Mathematics	M						+	+									+		3
E-business	M	+	+							+				+				+	5
English for information technology II	M						+			+					+				3
Principles of accounting	M						+	+		+					+				4
Management	M						+		+	+					+		+	+	6
Object oriented programming	M							+		+			+			+			4
Introduction to operating systems	M	+										+	+	+					4
Introduction to databases	M	+		+						+			+			+			5
Commercial and copyright low	M	+								+	+						+	+	5
Principles of marketing	M	+			+					+					+	+		+	6

Business statistics	M						+	+									+		3
Introduction to computer networks	M	+				+					+	+		+					5
Business information systems	M			+	+				+	+			+			+			6
Operating systems	M	+										+	+	+					4
Databases	M	+		+						+		+	+					+	6
Entrepreneurship	M						+		+								+		3
Information systems analysis and design	M			+						+		+	+			+		+	6
Management of information services	M	+		+					+	+							+	+	6
Protection and security of information Systems	M	+				+				+	+			+	+				6
Computer networks	M	+				+						+		+					4
Development of mobile applications	E			+						+			+			+			4
Digital marketing and marketing analytics	E				+					+						+			3
Operation research	E		+					+		+					+	+	+		6
Quality management	E									+							+	+	3
Principles of corporate finance	E		+				+		+	+					+		+		6
Project management	M									+			+			+		+	4
Development of web applications	E			+						+			+			+			4
Cloud computing	E									+			+			+			3
Professional praxis	M	+	+						+	+	+	+			+	+	+	+	10
Mandatory courses contributing to learning outcome		17	6	5	3	5	10	5	5	24	5	8	11	8	10	10	8	11	
Total courses that contribute to learning outcome		**17**	**8**	**7**	**4**	**5**	**11**	**6**	**6**	**31**	**5**	**8**	**14**	**8**	**12**	**15**	**11**	**12**	