COURSE CATALOGUE

STUDY OF INFORMATICS

University of Applied Sciences Hrvatsko zagorje Krapina

Study Coordinator
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INTRODUCTION

Study program	Informatics
Degree of education	Three-year professional study
Duration	3 academic years (6 semesters)
Mode of study	Full-time study / Part-time study
Professional title	Bachelor (baccalaureus / baccalaurea) information technology engineer [bacc. ing. techn. inf.]
ECTS credits	180
Teaching hours	The average weekly student workload is 22 to 23 school hours.
Duration of the semester	15 teaching weeks

Purposefulness and goal of the study

The main purpose of the study is to train IT engineers to independently perform maintenance, operation and design of personal computers and servers, small networks, information systems and applications, as well as their use as tools.
The knowledge that students will master includes:
• knowledge of electronics and hardware, system maintenance and network design of smaller systems.
• knowledge of software, software packages and the development of own programs, including applications in the computerization of offices, administration and the economy.

Relationship between studies and science and practice

The study of informatics is aimed at acquiring practical knowledge that graduates can immediately use in performing typical tasks in informatics.
A graduate student of informatics can perform the following tasks:
• management, maintenance and organization of work in companies and in independent activity in the conditions of promoting the application of advanced information technologies;
• business communication and presentation of the company from classic ways to multimedia presentations on the Internet;
• construction, installation and use of modern information systems: workstations, computer systems and networks, databases and electronic media for processing, storage, retrieval, transmission and communication of information;
• programming in graphic programming languages;
• communicating with IT and computer specialists during the development, implementation and maintenance of computer and software.

Competences for the study of Informatics

Professional competencies of the completed student of Informatics studies (knowledge catalogue):

1. Using common software tools for creating documents, tables, presentations and calculations.
2. Assembly, installation, use and maintenance of personal computers: hardware and software.
3. Programming in a modern structured and procedural programming language.
4. Understanding the principles, creating and maintaining smaller databases.
5. Design and calculation of basic digital circuits using market components.
6. Design and maintenance of Internet web presentations using modern software tools.
7. Functioning, components and application of modern computer networks.
8. Operation, installation and operation of modern operating systems.
9. Programming in object-oriented programming language.
10. Setting up and organization of a modern computerized office.
11. Forms and applications of electronic business.
12. Installation and maintenance of modern operating systems on servers.
13. Understanding and applying security measures to protect computer systems.
14. Understanding the services, architecture and resources of the telecommunications system.
15. Knowledge of the basics of signal processing and information coding.
16. Development and application of multimedia content.

Competences that can be acquired by attending elective courses:

1. Programming in modern languages based on tags (HTML, XML) and web programming (scripts, Java, Javascript).
2. Computer network design.
3. Installation, use and maintenance of mobile networks and communications.
4. Knowledge of the nature of information, basic appearance patterns and skills of creating algorithms for obtaining it.

Table of Compulsory Courses

Grading: Acceptable (2) – 50; Good (3) – 70; Very Good (4) – 82; Excellent (5) – 93

Database I (I050)

ECTS: 5
Lectures: 30
Exercises: 30
Semester: IV

Course objective: The student should get acquainted with the concept, possibilities and role of databases and database management systems in the information system. Practical work with the database will enable the student to get acquainted with and master the methods of handling the database.

Learning outcomes:

Students will be able to apply the acquired knowledge and skills to create a database for a particular business system, and use SQL to define and use it, and will:

1. Explain and define the basics of business system IS.
2. Explain and train students to develop Entity Relationship and relational data model.
3. Explain data normalization procedures. Understand the importance of database integrity, and become familiar with SQL.
4. Learn Data Description Language (DDL) and use examples.
5. Learn Data Manipulation Language (DML) and its functions and use examples

Required reading:

1. Robert Manger (2012) Baze podataka
2. Robert Manger (2010) Osnove projektiranja baza podataka

Language: Croatian

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Database II (I053)

ECTS: 5
Lectures: 30
Exercises: 30
Semester: III

Course objective:

Students will be trained to model more complex databases and set complex queries over a database. They will get acquainted with SQL application, "stored" procedures, transaction work, recovery methods and basics of database protection. They will get acquainted with data storage and basic principles of business intelligence.

Learning outcomes:

Students will be able to apply the acquired knowledge and skills to use the database in the business system, and will:

1. Specify the ways to connect tables in the database, and data integrity rules and use the Data Description Language to define the rules of reference data integrity.
2. Learn to manage permissions and access levels to data in a database using Dana Control Language.
3. Embed application SQL in the program.

4. Understand transaction management as business units, and control the parallel approach by using locking and defining the level of data isolation.
5. Recognize the basic forms of data warehouse design and distinguish the requirements of the transaction system and data warehouse system, and apply the principles of business intelligence tools that obtain information from the data warehouse

Required reading:

1. Robert Manger (2012) Baze podataka
2. C.J. Date (2007.) An Introduction to Database Systems, 8th Edition, Addison Wesley

Language: Croatian

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Digital Electronic Circuits (I045)

ECTS: 6
Lectures: 45
Exercises: 30
Semester: III

Course objective:

The student should learn to describe, analyse and design digital electronic circuits.

Learning outcomes:

After taking this course, the student will be able to:

1. predict the behaviour of simple and complex logic circuits.
2. calculate complex logic circuits based on desired behaviour.
3. distinguish simple logic circuits in real circuits and systems.
4. distinguish between electronic circuits and systems.

Required reading:

1. Uroš Peruško, Digitalna elektronika. Logičko i električko projektiranje, III prošireno izdanje, Školska knjiga, Zagreb 1996
2. Paunović, Stanko: Digitalni sklopovi i upravljanje, Izdavač: Element, Zagreb, 2009

Language: Croatian, English

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Enterprise Organization and Economics (I037)

ECTS: 6
Lectures: 30
Exercises: 15
Seminars: 15
Semester: II

Course objective:

The aim of the course is to acquaint students with the basic economic laws, the problem of costs and business results. Introduction to classical and modern organizational structures, as well as external and internal factors of the organization.

Learning outcomes:

After taking this course, the student will be able to:

1. explain the concepts of organization and economics of enterprises as a business system and evaluate the operation of enterprises in the market as well as understand cost management
2. describe the possibilities of designing the organizational structure and make, describe and interpret calculations and application of cost theory in pricing policy and different market situations
3. recognize organizational changes, explain basic management styles and valorize business results and propose and predict the performance and performance measures of the company
4. apply the organization of business functions and compare the economics of business, resources, work process and functions and examine on simpler examples the economics of means of work and objects of work as basic indicators of business efficiency
5. apply techniques for solving organizational problems and formulate the economics of investments and devise planning and development of investment projects

Required reading:

1. Sikavica, P.: "Organizacija", Školska knjiga, Zagreb, 2011.
2. Karić, M.: "Ekonomika poduzeća", Ekonomski fakultet u Osijeku, Osijek, 2009.

Language: Croatian

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Physics (I034)

ECTS: 6

Lectures: 30

Exercises: 30

Semester: I

Course objective:

Acquiring the ability to solve problem tasks by applying the available basic knowledge of mechanics, hydrostatics and hydrodynamics, heat, electromagnetism and optics. All knowledge available on the Internet is available.

Learning outcomes:

After taking this course, students will be able to:

1. Distinguish between basic and derived units of the international system of units of measurement
2. Use prefixes and write the order of small and large values.
3. To connect the concepts of mass, weight, energy, power and work, as well as heat and temperature with the phenomena in the environment
4. Model problem tasks in formal physical language, and present and argue the obtained solutions.
5. Use Internet services to record physical laws that can solve the problem
6. Interpret and independently graphically represent the relations of physical quantities
7. Explain the nature of electrical and magnetic phenomena, and the light and operation of optical instruments

Required reading:

1. Kulišić, Petar: Mehanika i toplina, Školska knjiga, Zagreb, 1989.
2. Cindro, Nikola: Fizika 2, Elektricitet i magnetizam, Školska knjiga, Zagreb, 1988.
3. Henč-Bartolić, Višnja; Kulišić, Petar: Valovi i optika, Školska knjiga, Zagreb 2004.
4. Zbirka zadataka iz Fizike za Srednju ili osnovnu školu.

Language: Croatian, English

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Server Installation and Administration (I054)

ECTS: 5
Lectures: 30
Exercises: 30
Semester: V
Course objective:
Gaining experience necessary for server administration and installation of hardware and software components, upgrades, maintenance and repair. Introduction to the operation of medium and large computer systems.
Learning outcomes:
After taking this course, the student will be able to:
1. use commands to work on a UNIX server file system through the command line.
2. create the necessary permissions and file system ownership through command line commands.
3. create operating system add-ons in the form of scripts using a runtime management system
4. configure the computer network in terms of client side and server side through DHCP service.
5. Design a web server on a UNIX operating system with the expected environment (PHP server tool and database).
Required reading:
1. Prof. dr. sc. Mario Žagar, Unix i kako ga koristiti, ISBN: 978-953-95223-0-6, 2007
2. Prof. dr. sc. Mario Žagar, UNIX i kako ga iskoristiti, 978-953-95223-1-3, 2007
3. Evi Nemeth, Garth Snyder, Trent R. Hein, Ben Whaley:UNIX and Linux System Administration Handbook, 4th Edition 4th Edition, ISBN-13: 978-0131480056, 2010
Language: Croatian, English

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Mathematics (I033)

ECTS: 7
Lectures: 45
Exercises: 45
Semester: I
Course objective:
Acquisition of basic knowledge of vector algebra and mathematical analysis.
Learning outcomes:
After taking this course, students will be able to:
1. Apply mathematically clear and unambiguous language in oral and written expression, and communication with others
2. Independent mathematical reasoning with logical, critical and creative thinking
3. Solve problem situations by analyzing possible strategies and choosing the right strategy
4. Present and argue the obtained solutions to problem tasks
5. Apply basic mathematical representations and visualize problems with sketches and drawings.

6. Search the Internet for the purpose of searching for definitions of terms and theorems applicable in problem solving

Literature:

1. Marušić, Sanja.: Matematika 1, Fakultet prometnih znanosti, Zagreb, 2003

Language: Croatian, English

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Mathematics II (I104)

ECTS: 7

Lectures: 45

Exercises: 45

Semester: II

Course objective:

Acquisition of basic knowledge of matrices and linear systems, series, partial derivation, multiple integration and differential equations. Apply mathematical laws of inference in the evidence processes of business and private environment.

Learning outcomes:

After taking this course, students will be able to:

1. Apply mathematical principles from five different domains of higher mathematics in everyday life: at home and at work
2. Mathematically think about and sketch space: direction, plane and surface, and algebraically write down the relations between them.
3. Communicate in mathematical language as the basis of unambiguous communication on a personal and business level
4. Use appropriate aids such as a smartphone, tablet, or laptop appropriately
5. Use rows to compute irrational and transcendent functions to basic arithmetic operations

Literature:

1. Fratrović, T., Ivanković, B.,Rupčić, D.,Rupčić, J.: Matematika 2, Fakultet prometnih znanosti, Zagreb, 2010

Language: Croatian, English

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Informatics I (ZAJ106)

ECTS: 4

Lectures: 30

Exercises: 30

Semester: I

Course objective:

To enable students to use the basic functions and possibilities of computer application in everyday work. Introduce them to the possibilities of information and communication technology in the

construction of information systems for business and other purposes.

Learning outcomes:

After taking this course, students will be able to:

1. Explain the main concepts and parts of information technology.
2. Use the main user functions of the Windows operating system and standard Microsoft Office processing programs data
3. List the stages in the development of business information systems.
4. Identify the main organizational measures in data protection on computers.
5. Present professional content using appropriate software technology

Required reading:

1. Steve Johnson, Office 2007 na dlanu, Izdavač „PROFIL-MOZAIK“, 2009.
2. Steve Johnson, Excel 2007, izdavač „Kompjuter biblioteka“ Zagreb

Language: Croatian, English

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Logistics Engineering (ZAJ143)

ECTS: 3
Lectures: 30
Exercises: 15
Semester: VI
Course objective:

Acquiring knowledge of the effectiveness of technical systems and integrated logistical support to technical systems.

Learning outcomes:

After taking this course, the student will be able to:

1. Identify the parameters of reliability and convenience for the maintenance of technical means
2. Solve the problems of managing the system of exploitation of technical means
3. Establish cooperation with designers, manufacturers, users and maintainers in the development, production and equipping with technical means adapted to exploitation
4. Compare and evaluate different technical means from the point of view of users and maintainers
5. Apply knowledge of reliability in relation to the costs of maintenance in the real system and the processes of exploitation for which he is responsible

Required reading:

1. Matijaščić, Z.: Logističko inženjerstvo, Veleučilište Velika Gorica, Velika Gorica, 2012

Language: Croatian

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Mathematics I (ZAJ101)

ECTS: 5
Lectures: 30
Exercises: 30
Semester: I
Course objective:
Adoption of mathematical way of thinking, strengthening of important elements of high school mathematics, adoption of basics of differential and integral calculus and basics of vector and matrix calculus.
Learning outcomes:
After taking this course, students will be able to:
1. Formulate a problem in mathematical language in the form of expressions, equations, derivatives, integrals, differential equations, systems of linear equations, vector and matrix expressions (outcome at the level of studies).
2. Apply the properties of the function from its graph to aircraft maintenance problems.
3. Solve a vector sequence, equation or system of equations, independently or with the help of a computer.
4. Solve the derivative, integral and differential equation independently or with the help of a computer.
5. Solve the matrix expression, independently or with the help of a computer.
Required reading:
1. B. Čulina, Š. Zlopaša: Matematika za tehničke visoke škole, prvi, drugi i treći dio, Veleučilište Velika Gorica, Velika Gorica,
2010.
Language: Croatian, English

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Mechanics (ZAJ112)

ECTS: 5
Lectures: 30
Exercises: 30
Semester: II
Course objective:
Acquiring basic knowledge of statics and dynamics sufficient to understand the operation of vehicles in terms of maintaining their parts with mechanical functions.
Learning outcomes:
After taking this course, the student will be able to:
1. calculate the magnitudes of the reactions of bonds from the equilibrium conditions of rigid bodies and rigid body systems
2. calculate the coordinates of the center of gravity
3. design / define a mechanical and mathematical model for a real problem in solving static and kinetostatic equilibrium problems

4. Using D'Alembert's principle, calculate unknown quantities of kinetostatic equilibrium.
5. apply the law of kinetic energy to the motion of a particle and a rigid body

Required reading:

1. Gugić D.: Tehnička mehanika, Podsjetnik (na pretincu u fileu MEH-POD-01.pdf)
2. Gugić D.: Tehnička mehanika, Vježbenica, 5. izdanje (na pretincu u fileu M-vjezbenica-05.pdf)

Language: Croatian, English

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Fundamentals of Ecology (ZAJ131)

ECTS: 3
Lectures: 30
Exercises: -
Semester: I
Course objective:

Gaining knowledge about the disturbances caused by man in nature and the measures he needs to take to restore ecological balance.

Learning outcomes:

After taking this course, students will be able to:
1. Identify basic environmental concepts and make them public.
2. Link patterns and consequences of environmental pollution with an emphasis on ethical responsibility.
3. Present the types of soil, air and water pollution.
4. Present the impact of radiation and economic parameters on the environment.
5. Independently comment on basic laws and regulations in the field of environmental protection.

Required reading:

1. Kalambura, S., Jovičić, N., Recenzirana predavanja iz Osnova ekologije, Velika Gorica, 2011.
2. Kalambura S., Krička, T., Kalambura, D., Gospodarenje otpadom, Velika Gorica, 2011

Language: Croatian

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Traffic and Transport Management (L310)

ECTS: 6
Lectures: 30
Exercises: 15
Seminars: 15
Semester: III
Course objective:

Acquiring knowledge of traffic management in complex conditions.

Learning outcomes:

After taking this course, the student will be able to:
1. Organize work processes in the logistics and transport company

2. Manage transport chains in different branches of traffic
3. Manage transportation costs in the logistics organization
4. Design the possibility of optimizing traffic and transport processes
5. Connect the knowledge of traffic and transport management with other knowledge in the field of logistics system
6. Critically evaluate the advantages and disadvantages of certain modes of transport
7. Design the possibility of optimizing the transport process
8. Organize a transport and transport system in the NATO environment
9. Monitor all available sources of information from the aspect of traffic and transport.

Required reading:

1. Zelenika, R.: Multimodalni prometni sustavi, Ekonomski fakultet Sveučilišta u Rijeci, Rijeka, 2006.
2. Županović, I.: Tehnologija cestovnog prijevoza, FPZ, Zagreb, 2002.
3. Barković M, Škoti B., Spudić R.: Vojna logistika, Veleučilište Velika Gorica, 2015.

Language: Croatian

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Methodology of Writing Professional and Scientific Papers

ECTS: 6

Lectures: 30

Exercises: 30

Semester: V

Course objective: Acquisition of knowledge from the methodology of writing professional and scientific papers.

Learning outcomes:

After taking this course, the student will be able to:

1. Apply the basics of scientific knowledge for quality management
2. Through knowledge of the types of professional and scientific works, they will define their characteristics and classify them
3. Apply logic, methods, methodology and methodology in professional and scientific research
4. Model the knowledge on the research conducted in order to acquire planning and management skills in the operational management
5. Will be able to determine the correct composition of writing professional and scientific papers
6. Use the achievements of information technology for strategic logistics process management

Required reading:

1. Zelenika, R.: Metodologija i tehnologija izrade znanstvenog i stručnog rada, Ekonomski fakultet Sveučilišta u Rijeci, Rijeka,
1998.
2.Žugaj, M.: Metodologija znanstvenoistraživačkog rada, Fakultet organizacije i informatike Sveučilišta u Zagrebu, Varaždin
1997.

Language: Croatian

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Multimedia (I046)

ECTS: 5
Lectures: 30
Exercises: 30
Semester: III
Course objective:
The aim of the course is to provide introductory and basic knowledge on certain topics in the field of multimedia technology and multimedia systems. Introduces the student to the basic concepts, design and processing of multimedia data. The student will gain a deeper knowledge and understanding of what multimedia application modeling is.
Learning outcomes:
After taking this course, the student will be able to:
1. Specify image, audio and video formats.
2. List and group procedures for compression of still images, videos and audio.
3. Explain the links between multimedia and the Internet, state the limitations
4. Be able to select parameters for multimedia transfer in different applications.
5. Describe the 3D coordinate system and the yield between the object, the cleaning point and the light source in the 3D coordinate system
Required reading:
1. R. Ahscyn, E. Fox: The ACM CD-ROM Hypertext Compendium, ACM Press, New York, 1991
2. A. Afuah: Internet Business Models and Strategies: Text and Cases, Stanton Bridge Forum, Boston, 2004
3. N. Prelog: Pogled kroz ekran: vodič u inform. društvo, DRIP, Zagreb 1992.
4. Ze-Nian Li, M. S. Drew, J. Liu (2014), Fundamentals of Multimedia (Texts in Computer Science), Springer,
5. K. Sayood, (2012), Introduction to Data Compression (University of Nebraska at Lincoln),
Language: Croatian, English

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Object Oriented Programming I (I049)

ECTS: 6
Lectures: 30
Exercises: 30
Semester: IV
Course objective:
In the course OOP1 the student should learn the basic principles of the OO paradigm and master the C ++ programming language in order to have enough prior knowledge to be able to master the program through OOP2 which prepares him for successful solving of programming problems from practice.
Learning outcomes:
After taking this course, the student will be able to:

1. identify the fundamental differences between the procedural and object paradigms and understand the fundamental features of the object.
2.form a class based on the definition of the properties and behavior of the object.
3. design a software solution in C ++ using your own classes by applying the concept of object-oriented paradigm with
application of inheritance.
4. design an object-oriented software solution using templates from STL C ++ libraries.
5.write your own class and function templates for solving object-oriented problems.
6. distinguish fundamental differences between object-oriented programming languages (C ++, C #, Java)

Required reading:

1. M. Slamić: Elektronički sadržaji predavanja (PPT prezentacije i rješeni primjeri) na web stranici VHZK Krapina, 2019., www.vhzk.hr
2. Boris Motik, Julijan Šribar: Demistificirani C++,peto dopunjeno izdanje, Zagreb, Element , 2018
3. Željko Kovačević, Miroslav Slamić, Aleksandar Stojanović: Objektno orijentirano programiranje, Skripta, ISBN 978-953-7048-77-8 , izdavač TVZ Zagreb, 2018

Language: Croatian, English

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Object Oriented Programming II (I055)

ECTS: 5
Lectures: 30
Exercises: 30
Semester: IV
Course objective:
In the course OOP2 using prior knowledge acquired at OOP1 the student prepares for successful solving of programming problems from practice through mastering advanced use of OO and component-based paradigms, using and learning C #, C ++ or Java (for application development can be used programming language of choice).
Learning outcomes:
After taking this course, the student will be able to:
1. use parallel development environment capabilities (IDE for C ++, C # or Java).
2. write an application with a simple or complex graphical interface using external libraries.
3. write an application that uses embedded data structures and generic classes.
4. create an application with several classes with the use of exceptions and the use of different file types (text, binary, XML, Excel, LOG).
5. integrate into the application work with relational databases (MS-SQL Server, Access, MySQL).

Required reading:

1. Slamić Miroslav, Nastavni materijali (PPT prezentacije i lekcije s odabranim poglavljima i rješenim primjerima), dostupno s
Web portala VHZK, 2019.
1. WEB Tutorial, Home and Learn, https://www.homeandlearn.co.uk/csharp/csharp.html, 2019

Language: Croatian, English

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Web Content Design (I042)

ECTS: 6
Lectures: 30
Exercises: 30
Semester: IV
Course objective:
Independent design of web content with basic today's web technologies with knowledge that allows you to track other and future technologies that will appear in this area.
Learning outcomes:
After taking this course, the student will be able to:
1. Identify the type of website and navigation model of the WEB organization
2. Critically evaluate the advantages and disadvantages of using different approaches to website organization and coding in relation to Internet bandwidth
3. Independently apply HTML and CSS technologies in website development
4. Use JavaScript language to create user interaction with web content
5. Independently design web content with basic WEB technologies
Required reading:
1. T.A. Powell, Web Design: The Complete Reference, Osborne/McGraw-Hill, 2000. ISBN: 0-07-212297-8
2. J. Reid, T. Valentine: JavaScript Programmer's Reference, ISBN 978-1-4302-463 0-5, ISBN 978-1-4302-463 0-5 (e-book), 2013
Language: Croatian

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Operating Systems (I052)

ECTS: 4
Lectures: 30
Exercises: 30
Semester: IV
Course objective:
The student should understand the functionalities of modern operating systems and learn to use them.
Learning outcomes:
After taking this course, the student will be able to:
1. analyze interruptions and interruption routines as well as distinguish interruptions from exceptions.
2. distinguish between the thread and the process as well as their advantages, disadvantages and concepts of implementation in operating systems.
3. compare forced and unforced algorithms for scheduling processor jobs.
4. distinguish between algorithms applicable to disk drives and cache.
5. analyze specific aspects of the computer system: multimedia, security and embedded systems.

Required reading:
1. Budin Leo, Golub Marin, Jakobović Domagoj, Jelenković Leonardo: ISBN: 978-953-197-610-7 Izdanje: 2010.
2. Abraham Silberschatz, Peter B. Galvin, Greg Gagne: Operating System Concepts, 10th Edition, Wiley Global Education;
2018.
Language: Croatian, English

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Basics of Programming (I041)

ECTS: 7
Lectures: 30
Exercises: 30
Semester: II
Course objective:
Acquisition of basic knowledge of programming, development of logic and mathematical competencies of bachelors of computer engineering.
Mastering basic programming techniques. Getting to know the possibilities of applying algorithms in work and business. Learning the C language and getting to know the C # language as a means of realizing algorithms. Training for effective communication and lifelong learning.
Learning outcomes:
1. Use appropriate data types and operators as needed when solving problems
2. Apply algorithms of summation, product, counting, search for maximum and minimum, substitution
3. Prepare documentation that is attached to the software solution
4. Use sequence, selection and repetition in problem solving
5. Create console applications and simple windows applications
Required reading:
Demistificirani C++, Boris Motik,Julijan Šribar , Zagreb, Element , 1997
Language: Croatian, English

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Business English I (I109)

ECTS: 4
Lectures: 15
Exercises: 30
Semester: I
Course objective:
To enable students for written and oral communication in English with a native speaker in the profession. Develop language skills: listening, speaking, writing and reading. Introduce students to

basic professional terminology and train them for independent speech production in various business situations. Awareness of socio-cultural differences and transfer basic knowledge of geographical, historical, political and economic characteristics of English-speaking countries.

Learning outcomes:

After taking this course, students will be able to:

1. recognize the sociolinguistic context of the language of the profession
2. conduct a more advanced level of analysis of language structures within the language of the profession
3. communicate orally and in writing independently in English
4. independently use professional literature, use professional terminology and grammatical structures in the context of the language of the profession; raising the level of acquisition of basic language skills, in the context of the language of the profession
5. assess the quality of English language content on the Internet

Required reading:

Gjukić, N.; Kranjski Hršak, V.; Liszt, V.; Špiljak, V.: English for Business I i II, Mikrorad, Zagreb , 2000

Language: English

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Business English II (I109)

ECTS: 4

Lectures: 15

Exercises: 30

Semester: II

Course objective:

Developing basic language skills, with an emphasis on the language of the profession; training students for independent written and oral expression in interactive situations in the context of the profession; developing basic language skills, with an emphasis on the language of the profession; training students for oral and written business communication; training students to self-present themselves / the company in English. Encouraging the independent use of professional literature in English and training for logical structuring of facts with the use of information technology (presentations in English related to professional topics).

Learning outcomes:

After taking this course, students will be able to:

1. recognize the sociolinguistic context of the language of the profession
2. conduct a more advanced level of analysis of language structures within the language of the profession
3. communicate orally and in writing independently in English
4. independently use professional literature, use professional terminology and grammatical structures in the context of the language of the profession; raising the level of acquisition of basic language skills, in the context of the language of the profession
5. assess the quality of English language content on the Internet

Required reading:

Lecture materials (published on the course website) and adapted texts taken from contemporary professional and methodological literature.

Language: English

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Business German I (I110)

ECTS: 2
Lectures: 15
Exercises: 30
Semester: I
Course objective:
Developing language skills in the context of the profession (informatics) and business environment. Systematization and deepening of knowledge in the general language field and language laws; optimizing language skills: listening comprehension, reading comprehension, writing and speaking (independent presentation or interaction); training students for written and oral communication in German with native speakers; intercultural sensitization and promotion of tolerance (distinguishing established stereotypes from intercultural peculiarities).
Acquisition of competencies that enable successful translation of simpler original professional texts (independent use of dictionaries and other manuals (classic as well as mediated by electronic media).
Learning outcomes:
After taking this course, the student will be able to:
1. conduct basic oral and written communication (use basic phrases when meeting, describing individual family members and activities during the day in the family and at work, help foreigners find their way, communicate in the restaurant and hotel reception, understand job advertisements and react to them)
2. write short business letters, notes and messages (use regular phrases to start and end letters, compose a short message),
3. understand and translate simple professional texts,
4. integrate known linguistic laws into a new simple context,
5. recognize the similarities and differences of language structures of the mother tongue and foreign language.
Required reading:
1. Selection of texts for IT students at VHZK (internal script in electronic form, prepared by A. Puović, prof.) - Texte (Informatik)
2. Basics of grammar with exercises (internal script in electronic form, prepared by A. Puović, prof. Grundrisse der Grammatik mit Übungen)
Language: German

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Business German II (I110)

ECTS: 2
Lectures: 15
Exercises: 30
Semester: II
Course objective:
Developing language skills in the context of the profession (informatics) and business environment. Systematization and deepening of knowledge in the general language field and language laws; improving skills: listening comprehension, reading comprehension, writing and speaking (independent presentation or interaction); training students for written and oral communication in German with native speakers; intercultural sensitization and promotion of tolerance (distinguishing established stereotypes from intercultural peculiarities).
Acquisition of competencies that enable successful translation of original professional texts (independent use of dictionaries and other manuals: classic as well as mediated by electronic media)
Learning outcomes:
After taking this course, the student will be able to:
1. to conduct basic oral and written communication (about the study, about your obligations at work; to conduct simple telephone conversations; to communicate with business partners at fairs and professional gatherings),
2. write short business letters, notes and messages (use basic phrases characteristic of business correspondence, compose letters according to available standard forms),
3. understand and translate simple / more demanding professional texts,
4. integrate known linguistic laws into a new context,
5. use terms of the language of the profession,
6. recognize the similarities and differences of language structures of the mother tongue and foreign language
Required reading:
1. Selection of texts for IT students at VHZK (internal script in electronic form, prepared by A. Puović, prof.) - Texte (Informatik II)
2. Basics of grammar with exercises (internal script in electronic form, prepared by A. Puović, prof. Grundrisse der Grammatik mit Übungen)
Language: German

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Computer Application (I035)

ECTS: 6
Lectures: 30
Exercises: 30
Semester: I
Course objective:
To instruct students in the historical development of computers, computer architecture and the internal functioning of digital computers.
Learning outcomes:
After taking this course, the student will be able to:

1. Be able to explain the block diagram of a computer
2. Be able to explain the differences between RISC and CISC architecture
3. Be able to explain the internal functioning of the processor and its basic architecture
4. Be able to distinguish programming languages, program basic algorithms in Python programming language

Required reading:
1. Presentations from lectures and exercises
2. Aritmetičko logička jedinica (ALU) ,Završni rad Davor Bogdanović, Osijek FER
3. Connecting with Computer Science second edition, Greg Anderson, David Ferro, Robert Hilton, Weber State University,2011
Language: Croatian

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Programming (I044)

ECTS: 5
Lectures: 15
Exercises: 30
Semester: II
Course objective:
Acquisition of more advanced knowledge in programming, development of logic and mathematical competencies of bachelors in computer engineering. Use complex data types, pointers, files and create your own functions. Getting to know the possibilities of applying algorithms in work and business. Using the C and C # languages as tools for realizing algorithms. Training for effective communication and lifelong learning.
Learning outcomes:
1. Use one-dimensional fields, multidimensional fields and pointers in algorithms
2. Select and use complex data types in specific problem situations
3. Create your own general purpose functions
4. Open, close, write and read data using files. Make a data analysis.
5. Create a windows application using data structures.
Required reading:
Demistificirani C++, Boris Motik, Julijan Šribar , Zagreb, Element , 1997
Language: Croatian

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Computer Network Design (M063)

ECTS: 6
Lectures: 30
Exercises: 30
Semester: V

Course objective:
To enable students to analyze the needs of a computer network, design networks according to requirements, and primary network protection.
Learning outcomes:
After taking this course, the student will be able to:
1. Participate in the development of the local network project as well as in the supervision of the proper functioning of the network.
2. Use tools to analyze the work of the local network and identify problematic parts of the network
3. Participate in the design of network protection against unauthorized entry
4. Propose solutions to improve the development and protection of the network
5. Cooperate with the network administrator and the person in charge of protecting the network from unauthorized entry into the network
Required reading:
1.https://www.itjones.com/blogs/2020/3/15/how-to-build-a-computer-network-for-your-small-business-part-1-the-basics
2.https://www.itjones.com/blogs/2020/4/1/how-to-build-a-computer-network-for-your-small-business-part-2-improvements
3. Networking Fundamentals 2nd Edition by Richard M. Roberts
Language: Croatian

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Security and Protection of Information Systems (I056)

ECTS: 5
Lectures: 30
Exercises: 30
Semester: V
Course objective:
Acquiring knowledge in the field of security and protection of information and communication systems.
Learning outcomes:
After taking this course, students will be able to:
1. Identify IS threats
2. Explain the concepts related to malicious content and identify types of malicious content
3. Identify major IS security risks
4. Notice the lack of IS security tools / equipment
5. Observe non-compliance with legal regulations
6. Participate in the creation of the Rulebook on Information Security
7. Identify deficiencies in physical and technical protection
Required reading:
1. Požgaj, Š: Sigurnost informacijskih sustava , radni materijal, TVZ, 2006
2. Dragičević , D. (1999): Kompjutorski kriminalitet i informacijski sustavi, Informator, Zagreb,
3. web sites CERT
4. web sites ZSIS

Language: Croatian

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Introduction to Office Operations (I036)

ECTS: 6
Lectures: 30
Exercises: 30
Semester: I
Course objective:
To train and teach students how to organize and informatize office and office operations with the application of modern information and communication technologies (ICT).
Learning outcomes:
After taking this course, the student will be able to:
- Determine and define the characteristics and possibilities of application of information and communication technologies required for work in business, especially office business
- Define information, computer and software support needed for data and document management in business, especially office business
- Define the communication support needed for business, especially office business
- Define and implement security measures for the protection of information and communication systems used in business, especially office business
- Identify the necessary measures for ergonomics of the workplace with a computer
Required reading:
1. Hercigonja-Szekeres, M: Uvod u uredsko poslovanje, Priručnik za studente, Krapina, 2020. www.vhzk.hr
2.https://www.google.hr/search?q=Uredsko+poslovanje+skripta&sa=X&ved=2ahUKEwic6YOP9K_sAhVpoosKHVJGAb8Q1QIoAXoECAsQAg&biw=1536&bih=722 iz
https://Studentski.hr (10.10.2020.)
3. https://bib.irb.hr/datoteka/584665.UredskoPoslovanjeMatijaVargaEUCopyright.pdf (10.10.2020.)
4. Varga, Strugar et al: Informacijski sustavi u poslovanju, Ekonomski fakultet, Sveučilište u Zagrebu, 2016
5. Programski paket Microsoft Office
Language: Croatian, English

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Probability and Statistics (I043)

ECTS: 5
Lectures: 30
Exercises: 45
Semester: III
Course objective:

Get acquainted with the basic concepts of combinatorics and probability theory as well as statistical methods used in quantitative analysis in software development and data science.

Learning outcomes:

After taking this course, the student will be able to:

1. Apply concepts from combinatorics and probability theory in concrete random experiments.
2. Recognize the distribution of a random variable and know its most important properties.
3. Use theoretical laws to draw conclusions about the probability of an event.
4. To determine the statistical set, its characteristics and their modalities for each observed statistical survey, and to calculate and interpret the numerical characteristics of the characteristics.
5. Test statistical hypotheses on the parameters of the distribution in the basic set.
6. Determine the equation of the linear regression model for features, interpret its parameters and what predictions of feature values can be obtained.

Required reading:

1. Nastavni materijali (Merlin).
2. M. Benšić, N. Šuvak – Uvod u vjerojatnost i statistiku. Izdavač: Sveučilište J.J. Strossmayera, Odjel za matematiku, 2014.

dostupno online: link: https://www.mathos.unios.hr/uvis/UVIS_knjiga_final/UVIS_knjiga_web.pdf

2. Dumičić, K. i dr., Poslovna statistika, EFZG, Element, 2011.

Language: Croatian, English

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Communication Skills (I062)

ECTS: 5
Lectures: 30
Exercises: 30
Semester: IV
Course objective:

Acquiring the basic knowledge and skills needed to communicate in the workplace and in general.

Learning outcomes:

After taking this course, the student will be able to:

1. Give an independent speech and oral presentation
2. Conduct business meetings and negotiate
3. Introduce yourself to the employer
4. Explain communication models
5. Manage communication in business and life

Required reading:

1. Bovee, C.L., Thill, J.V. Suvremena poslovna komunikacija, Mate, Zagreb, 2012.
2. J.C. Pearson, B.H. Spitzberg: Interpersonal communication: concepts, components and contexts. Dubuque: Wm. C. Brown Publishers, 1990
3. J.I. Van Emden, L. Becker: Presentation skills for students. London: Palgrave Macmillan, 2004

Language: Croatian, English