



UNIVERSITETI I EVROPËS JUGLINDORE
УНИВЕРЗИТЕТ НА ЈУГОИСТОЧНА ЕВРОПА
SOUTH EAST EUROPEAN UNIVERSITY

Study program **Computer Sciences**

Faculty	Contemporary Sciences and Technologies
Study Cycle	First Cycle (Undergraduate)
ECTS	240
Code	EDU-240
Title	Bachelor of Science in Computer Sciences / Module: Education
Accreditation archive number [240]	03149/1
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Decision for starting of the program	
Accreditation date	25.05.2023

Description of the program

The Faculty of Contemporary Sciences at SEEU - Tetovo is a higher education institution with a general objective to perform high-educational, scientific-research activity in the field of Computer Sciences, Computer Engineering, Education and Business Informatics.

The Computer Sciences program is designed to meet the requirements of the local market, yet provide a modern and global perspective.

The program objectives are:

- to provide students with opportunities to acquire wider communicational, lingual and analytical skills;
- to provide students with opportunities to acquire theoretical and practical knowledge in the field of Computer Sciences, as well as to apply that knowledge in real life and their professional practice;
- to equip students for joining the development and implementation of different software solutions;
- to equip students with the required skills for working on projects, individually or in group, which may be scientific- research, developmental or practical work;
- to provide students with good background for further adaptation to the new technological/ market changes and their application;
- to provide students with support skills for organizing, realizing and implementing methods and procedures in other fields.

Career

After successfully completing the program, the graduated students have the opportunity to be employed in different areas of industry, namely: ICT-oriented companies, business sectors, public administration etc.

The graduates will be able:

- to use Computer Systems and Information Technology in everyday life and beyond;
- to effectively apply the studied methods and algorithms;
- to program solutions for different problems;
- to organize databases, design, implement and further maintain and regulate the performance;

- to design and implement Computer Networks;
- to efficiently use the Internet technology;
- to organize and aid the technical solutions for solving different social, economical, scientific- technical issues.

Learning outcomes

Knowledge and understanding

- Understanding local, regional and global changes in education.
- Students will be leaders in educational innovation.
- Students will be well versed in the reforms of the educational process in the Republic of North Macedonia and in the region and will possess skills for the implementation of action plans and reform programs.
- Knowledge and understanding in conducting small-scale research and applying projects in the field of educational sciences.

Applying knowledge and understanding

- Ability to apply / use computer systems in the usual work tasks in the educational process.
- Students will be able to advise governmental and non-governmental policy makers regarding education as well as plan local needs and staffing needs by adapting them to the country's economic resources, while emphasizing strategic management and leadership skills.
- Students will be able to take leading roles in educational institutions (public and private) in the Republic of North Macedonia and beyond.

Making judgement

- Students will face the risk and challenges brought by the change of the traditional with the modern in the educational system.
- They will be able to evaluate programs, curricula, staff and educational policies.

Communication skills

- Ability to follow advances in the field of educational and computer sciences.
- The ability to apply learning skills in information systems teaching and training in schools or organizations.
- The ability to apply learning skills in creating and managing projects.
- They will possess the ability to use technology in classrooms and in administration for their successful functioning in knowledge-based societies and institutions.

Learning skills

- They will acquire skills for providing leadership in schools throughout the Republic of North Macedonia and for implementing research in educational institutions.
- They will acquire skills for managing human, economic and technological resources.
- They will be trained and competent for taking responsibility and for the advancement of education. Through training, mandatory for all students, they will be able to act effectively in a multicultural and multilingual environment.

List of courses

Semester 1

- [ACS-102] [6.0 ECTS] **Structural Programming**
- [ACS-103] [6.0 ECTS] **Linear Algebra**
- [CCS-101] [6.0 ECTS] **Introduction to Computer Sciences**
- [3.0 ECTS] **Albanian/Macedonian Language**
- [3.0 ECTS] **English Language**
- [6.0 ECTS] **Elective/Digital Competencies**

Semester 2

- [CCS-102] [6.0 ECTS] **Internet Technologies**
- [CCS-303] [6.0 ECTS] **Object - Oriented Programming**
- [ACS-204] [6.0 ECTS] **Calculus**
- [3.0 ECTS] **English Language**
- [6.0 ECTS] **Elective/Digital Competencies**
- [3.0 ECTS] **Albanian/Macedonian Language**

Semester 3

- [CCS-202] [6.0 ECTS] **Computer Architecture**
- [CCS-301] [6.0 ECTS] **Algorithms and Data Structures**
- [CBI-203] [6.0 ECTS] **Discrete Structures**
- [EACS-05] [6.0 ECTS] **Automata and Formal Languages**
- [C2069] [3.0 ECTS] **Oral Communication**
- [3.0 ECTS] **English Language**

Semester 4

- [C2070] [3.0 ECTS] **Written communication**
- [C2307] [6.0 ECTS] **Client Side Programming**
- [CCS-403] [6.0 ECTS] **Databases**
- [CCS-402] [6.0 ECTS] **Applied Probability and Statistics**
- [CCS-401] [6.0 ECTS] **Operating Systems**
- [3.0 ECTS] **English Language**

Semester 5

- [CCS-503] [6.0 ECTS] **Computer Networks**
- [CCS-501] [6.0 ECTS] **Web Programming**
- [6.0 ECTS] **Elective from other unit**
- [6.0 ECTS] **General elective (from SP)**
- [6.0 ECTS] **General elective (from SP)**

Semester 6

- [ECS-604] [6.0 ECTS] **Data Mining**
- [CCS-502] [6.0 ECTS] **Software Engineering**
- [6.0 ECTS] **General elective (from SP)**
- [6.0 ECTS] **General elective (from SP)**
- [6.0 ECTS] **Elective from other unit**

Semester 7

- [C2330] [6.0 ECTS] **Psychology**
- [C2331] [6.0 ECTS] **Pedagogy**
- [C2332] [6.0 ECTS] **E-Learning Design: Learning Instructions and Assessment**
- [6.0 ECTS] **General elective (from SP)**
- [6.0 ECTS] **Professional Elective (from the module)***

Semester 8

- [C2333] [6.0 ECTS] **Methodics**
- [C2334] [6.0 ECTS] **Teaching Practicum**
- [C2335] [6.0 ECTS] **Ethics and IT use in Education**
- [6.0 ECTS] **General elective (from SP)**
- [6.0 ECTS] **Professional Elective (from the module)***

Description of courses

Core courses

- **Structural Programming**

This subject presents the basic concepts of programming which further serve as an introduction to structured programming. The aim is to teach students in writing clear an efficient program by applying a wide range of programming techniques.

- **Linear Algebra**

This course is designed to train students with the concepts and methods that form the basis of linear algebra. Linear algebra actually occurs everywhere. Concepts of the subject are used continuously used anywhere without being named as such. The integral is linear, the derivative is linear and so on. Most of the applications of mathematics in "real life" come to expression through the linear part. This is very important knowledge that will always be important for students in this direction. After completing this course students will be able to use and apply linear equalities and their resolution. Algebra for matrices. Linear transformations and how they are used for the application. Vector spaces. Inherent values and vectors of the real matrix. Determinants and orthogonality. The important goal is to link linear algebra with other areas with or without the use of mathematics.

- **Introduction to Computer Sciences**

Introduction to the intellectual enterprises of computer science and the art of programming. This course teaches students how to think algorithmically and solve problems efficiently. Problem sets inspired by the arts, humanities, social sciences, and sciences. Designed for concentrators and non-concentrators alike, with or without prior programming experience. Among the overarching goals of this course are to inspire students to explore unfamiliar waters, without fear of failure, create an intensive, shared experience, accessible to all students, and build community among students.

- **Internet Technologies**

The main objective of the course is to give students a practical knowledge of basic mechanisms, services and protocols of the global network - the Internet. The course provides mastering of the overall architecture of an effective, scalable and secure web page. The students will acquire deep technical knowledge of XML, XHTML (lists, tables, figures, multimedia and forms), CSS (formatting, styles and layouts), and JavaScript (variables, conditions, loops and functions).

- **Object - Oriented Programming**

This course is intended for students who have knowledge of structured programming, and they need to advance knowledge in object-oriented programming. The course objective is students to gain knowledge and understanding in the area of object-oriented programming (abstract data types, classes, encapsulation, abstraction, inheritance, polymorphism, etc.), to teach them how to write clear and efficient program using the object-oriented programming principles for creating effective business applications have the ability to evaluate a particular object-oriented solution, and be able to apply the concepts of abstract data types in solving problems based on the principles of object-oriented programming.

- **Calculus**

Through this subject, students learn about and fully master the concepts: function (as a separate mapping), ways of setting a function, and continuity of essential functions. Students are also enabled to find the limit of a function (limits), derivatives, solving problems for the determination of the monotony and finding the maximum and minimum value of real functions. This is done in order to finally be able to plot a graph of a function from which you can also read all the properties and characteristics of functions. The course also aims to familiarize students with the notion of integral and it will be applied to various practical problems.

- **Computer Architecture**

Computer Architecture is about the structure and function of computers. Computer Architecture purpose is to present, as clearly and completely as possible, the nature and characteristics of modern-day computer systems. It provides a thorough discussion of the fundamentals of computer organization and architecture and relates these to contemporary design issues.

- **Algorithms and Data Structures**

Aims of the course: Achieve an understanding of fundamental data structures and algorithms and the tradeoffs between different implementations of these abstractions and theoretical analysis, implementation, and application of

data structures Arrays, Lists, stacks, queues, heaps, dictionaries, hash tables, trees and balanced trees, sets, and graphs and searching and sorting algorithms. The main aims to achieve at the end of the course by students are: 1. Be able to asymptotically analyze algorithms and data structures. 2. Improve object-oriented programming skills. 3. Improve understanding of recursive solutions. 4. Understand the use of linear and non-linear data structures and practice higher level programming skills. 5. Write object-oriented solutions involving data structures. 6. Understand the tradeoffs between different data abstractions and use the appropriate one for a given problem. 7. Understand and use the most efficient data structure to store and operate the data.

- **Discrete Structures**

The aim of the module is to provide students with mathematical knowledge that has a straightforward application in the field of computer sciences. A part of the concepts dealt with in this module are already known to the students, but the aim here is larger, to formalize these up to a level which allows them to provide ideas for solving different practical problems.

- **Automata and Formal Languages**

The aim of this course is to introduce the theoretical foundations of computer sciences from the perspective of the theory of formal languages and finite automata as machines for recognizing correspondent classes of languages. The course also offers an introduction to the decidability, Church - Turing thesis and time complexity, P and NP problems as well as NP-completeness.

- **Oral Communication**

Aims of the course program: - To develop verbal communication skills. - To be able to be actively involved in a discussion on a particular topic. - To master the techniques for successful communication. - To express their critical opinion on certain topics. - To apply the adopted techniques in their professional career.

- **Written communication**

Course objectives: - To gain knowledge about the writing process (stages in creating a text). - To approve the standard language norms. - To achieve an academic level for written expressions in Albanian, Macedonian or English, which will apply the previously acquired knowledge of the standard language. - Encourage student motivation for written expressions regardless of text types and forms. - To approve the criteria of textuality, which are essential for a text. - Acquisition of materials search skills (libraries and online resources).

- **Client Side Programming**

This course provides an introduction to the various languages and tools used in client-side programming. The students will learn the techniques necessary for creating interactive and feature rich web applications. It focuses on the client-side languages, tools, and libraries that professionals use to build the web sites. Upon completing the course, students will be able to build robust web applications, and will have the foundation for independently learning new skills in the every-changing world of web development. Due to the particularly dynamic nature of Internet technologies, course content may change as appropriate.

- **Databases**

This course covers an introduction to database design and the use of databases, with a short introduction to the internals of relational database management systems. It includes extensive coverage of the relational model, relational algebra, and SQL. The course also features database design and relational design principles based on dependencies and normal forms. A student who successfully completes this course will be able to use the models and concepts of designing databases. He / She will be able to use databases, to design a simple and specific database based on the relational database model, to use MS SQL Server database management system (DBMS), SQL language and implementation of queries.

- **Applied Probability and Statistics**

This course aims to provide an understanding of the basic concepts in probability, conditional probability and independent events. It will also focus on the random variable, mathematical expectation, and different types of distributions, sampling theory and estimation theory. Another objective of the course is to design a statistical hypothesis about the real-world problem and to conduct appropriate tests for drawing valid inference about the population characteristics. It is inevitable to have the knowledge of hypothesis testing for any research work. The course will provide an opportunity to learn Excel and MegaStat programming to a substantial extent, to specifically apply theoretical knowledge.

- **Operating Systems**

The main objective of this course is to introduce the fundamental concepts behind operating systems (OS). As an intermediate level between the hardware and the application level, operating systems need to control and share computer resources. This course starts with a short introduction of the main OS concepts, their evaluation and detailed analysis. The discussion, among others, covers processes and tasks, synchronization points, memory management, input/output devices, file systems and security. The second part of the course deals with the concepts of distributed, multimedia and on-chip operating systems. At the end, the concepts of mobile operating systems will be covered. All these concepts will be accompanied with case studies of specific OS in each category.

- **Computer Networks**

The course will cover everything from the fundamentals of modern networking technologies and protocols to an overview of the cloud and data centers. The course will cover key network “layers” and how they operate together to provide services, with an emphasis on application, transport, network, and link layers. Further, the course will focus on how these layers manifest on the Internet, and how the Internet’s design has facilitated its tremendous growth. The projects in the course will be chosen from a wide range of networking related topics and can include analysis, measurement, simulation or implementation. They will be expected to address a networking problem and to form the basis for a possible conference/workshop paper or poster submission (optional).

- **Web Programming**

This course covers the design and development of web applications, covering both server-side and client-side programming. The course also deals with the design of databases for the web, web programming languages, and data integration in web applications.

- **Data Mining**

The aims of the study program are to gain basic knowledge from data analysis, normalization, descriptive statistics, building data warehouses, classification, prediction, clustering and data visualization. Furthermore, students will learn how to build models and evaluate them as well as present their results. During practice it is foreseen implementation of algorithms and models in python.

- **Software Engineering**

This course covers the methods, values, attitudes and techniques in software systems. It provides an understanding of the need for rigor and enables students to select and apply a relevant methodological approach to the development of well-designed and documented systems. The main aims of this course are to: introduce students to the overarching concerns of software engineering practice; provide an understanding of the various processes software engineers may employ in developing software; develop an understanding of the tools and techniques employed in contemporary software engineering; provide students with an experience of the way techniques are applied in practice; develop the capacity to identify relevant approaches to software.

- **Psychology**

The aim of this course is to offer development, learning and teaching, as concepts and basic practices that enable teachers to teach for thought development. With this course students will gain a theoretical foundation and set of strategies that develop thinking and their ability to reflect on thinking, a process often called metacognition. During this course students will learn about the various strategies that encourage teaching about and around thinking, and they will also be tasked with designing and evaluating their own strategies. To foster reflective thinking and metacognitive knowledge in students, participants will have the opportunity to learn about development, learning, teaching, habits, critical thinking, and the problem-solving process.

- **Pedagogy**

Course aims: The changes that occur in the individual with learning in the affective field, affect the changes in valuation and "worldview". - More specifically for our issues, it is important to see how learning affects the pedagogical role in schools. So cognitive and affective changes in the learning process are considered. - The factors on which the quality of learning depends are recognizing their own needs, the experiences that the individual has with learning, knowledge of the learning process, learning style, motivation, learning skills, organizing and managing learning, learning climate and methods of learning.

- **E-Learning Design: Learning Instructions and Assessment**

Course aims: Aims of the course program: The course covers the methodology, skills, and techniques necessary for developing effective eLearning solutions. This course provides the foundation for instructional development. The

main aims include: -Exploring current theories, principles, methodologies, and techniques of online learning -Creation interactive eLearning solutions that meet learners' needs -Building strong knowledge and skills to design eLearning interactions that increase learning effectiveness.

- **Methodics**

Students are expected to get acquainted with some new methodologies developed in accordance with the implications for instruction of the main learning theories that belong to the field of Educational Psychology. In this way, they will better understand the learning process and organize their teaching practice. After completing the course, they will be able to apply some of the principles of Behaviorism, Cognitivism, Constructivism and other learning theories and organize their teaching of Computer Sciences by defining the steps and presenting the theoretical and practical knowledge in a well-organized manner and following some meaningful steps in lesson planning and delivery in order to maximize students' learning.

- **Teaching Practicum**

On successful completion of this course, students should be able to relate academic course material to real teaching conditions at workplace; develop experience in various aspects of teaching ICT such as planning, organizing, material selection and lesson delivery, as well as adapting to workplace culture; develop appropriate work related habits and professional attitudes by observations of skilled teachers; communicate effectively in a variety of forms to students, parents and colleagues; and work in a team.

- **Ethics and IT use in Education**

This course provides a comprehensive overview of current ethical issues in the use of information technology (IT) in education. It examines an array of long-standing and emerging issues facing IT users ranging from free speech, privacy, intellectual property, hacking, and the digital divide, to ethics in social networking and online communities. The course discusses the ethical dilemmas and responsibilities of IT users, and promotes the critical examination and responsible use of IT.

Elective courses

- **Albanian Language for Beginners 1**

Albanian Language course for beginners 1 is prepared with the purpose to enable the students, who do not have basic knowledge of the Albanian language, to get to know the characteristics of this language, to gain knowledge of the linguistic structure of the Albanian language, and to extend and apply their knowledge in everyday situations. Correspondingly, they will gain knowledge of the structure of the Albanian language; They will also acquire a modest set of various lexical and grammatical categories which will enable them carry out simple conversations.

- **Albanian Language for Beginners 2**

Albanian Language course for beginners 2 is prepared with the purpose to enable the students, who do not have basic knowledge of the Albanian language, to get to know the characteristics of this language, to gain knowledge of the linguistic structure of the Albanian language, and to extend and apply their knowledge in everyday situations. Correspondingly, they will gain knowledge of the structure of the Albanian language; They will also acquire a modest set of various lexical and grammatical categories which will enable them carry out simple conversations.

- **Macedonian Language for Beginners 1**

The programme Macedonian Language for beginners 1: reading, writing, listening and speaking. Through special exercises and lectures, introduction to basic communication in Macedonian language is provided, i.e., introducing, greeting, presentation, enriching vocabulary and write and understand short texts. When we created this program, we took into the consideration that students can apply the acquired knowledge further. The material is processed under the principle of combined lectures and exercises, and continuous tasks through which students are actively involved during class and participate with their questions and suggestions.

- **Macedonian Language for Beginners 2**

The programme Macedonian Language for beginners 2 includes: reading, writing, listening and speaking activities. In this course the following issues are covered: daily routines, planning activities for the next period, description of persons, places and objects. When we created this program, we took into the consideration that students can apply the acquired knowledge further.

- **Macedonian Language Intermediate Level 1**

The curriculum for Macedonian Language intermediate level 1 includes: reading, writing, listening and speaking through which the students: will enrich the vocabulary through appropriate texts for daily activities (in a bank, in a library, in a ministry, etc.) and will improve the skills for professional writing and speaking that are necessary for clear and effective communication in their further professional career. A special, continuous emphasis on the overall activity is placed on the linguistic elements, that is, on the spelling and grammar of the Macedonian standard language. Experts as one of the key elements for good written expression state the correct use of language.

- **Macedonian Language Intermediate Level 2**

The curriculum for Macedonian Language intermediate level 2 includes: reading, writing, listening and speaking. Special emphasis is placed on the development of students' communication skills, or the use of language in daily activities and professional context, enriching the vocabulary and acquiring knowledge about the structure and types of professional texts. Different communication styles will be covered, with the goal being for students to establish good communication with the audience through their texts and to attract and retain their attention.

- **Macedonian Language for Professional Purposes 1**

Upon completion of the course Macedonian for Professional Purposes 1, students are expected to broaden and strengthen their abilities for more advanced written and oral expression in Macedonian in the context of the different professional settings. Students are expected to be able to read, write and comprehend various professional texts in Macedonian. They are also expected to acquire knowledge and skills about the general terminology from the field of law, business and economy, administration, computer sciences, language and communication and to be able to use that terminology in the framework of their future professions. Besides accomplishing these professional aims, students are expected to become more autonomous language learners and be able to think critically about different topics in a multilingual and multicultural environment.

- **Macedonian Language for Professional Purposes 2**

Upon completion of the course, Macedonian for professional purposes 2, students are expected to reconfirm and expand further their abilities for advanced written and oral expression in Macedonian, in the context of their future professions. They should be able to read, write and comprehend different kinds of professional texts in Macedonian, to analyse and discuss those texts, as well as to create their own documents, including professional biography in Macedonian (CV). They should also expand the knowledge of specific terminology from the field of law, business and economy, administration, computer sciences, language and communication and be able to use that terminology in simulation of authentic situations from the professional environment, in debates and exchange of opinion regarding different aspects of these professions.

- **English Language 1**

By the end of each level of this course determined by the placement test taken at enrolment, students are expected to be at different levels as determined by the Common European Framework (CEF) and should be able to understand and use familiar expressions and phrases aimed at the satisfaction of needs of a concrete type; ask and answer questions about personal identification and personal relations; talk and write about their everyday lives, leisure, entertainment, finance, problems; ask and answer questions about university degrees, job skills and situations; invite and respond to invitations read and listen for gist, detail and comprehension; evaluate their own progress; participate in role plays and dialogues on familiar topics and produce a paragraph/ essay on topics related to the course material. By the end of this course students are expected to be at A1 level of the Common European Framework (CEF) and should be able to understand and use familiar expressions and very basic phrases aimed at the satisfaction of needs of a concrete type; ask and answer questions about personal identification and personal relations; students should be able to introduce themselves and others by using pronouns and possessives, use greetings, name things in the classroom, distinguish between singular and plural, recognize and use numbers from 1- 100. Students should be able to describe a typical day, recognize and use simple constructions in order to describe their daily routine; talk and write about their everyday lives, leisure; ask and answer questions about food and drink. students should be able to give dates, use appropriately the vocabulary related to months in the year, make polite requests, describe places, travel and personal histories; choose a destination and give directions; discuss likes and dislikes.

- **English Language 2**

By the end of each level of this course determined by the placement test taken at enrolment, students are expected to be at different levels as determined by the Common European Framework (CEF) and should be able to understand and use familiar expressions and phrases aimed at the satisfaction of needs of a concrete type; ask and answer questions about personal identification and personal relations; talk and write about their everyday lives, leisure, entertainment, finance, problems; ask and answer questions about university degrees, job skills and situations; invite and respond to invitations read and listen for gist, detail and comprehension; evaluate their own progress; participate

in role plays and dialogues on familiar topics and produce a paragraph/ essay on topics related to the course material. By the end of this course students are expected to be at A1 level of the Common European Framework (CEF) and should be able to understand and use familiar expressions and very basic phrases aimed at the satisfaction of needs of a concrete type; ask and answer questions about personal identification and personal relations; students should be able to introduce themselves and others by using pronouns and possessives, use greetings, name things in the classroom, distinguish between singular and plural, recognize and use numbers from 1- 100. Students should be able to describe a typical day, recognize and use simple constructions in order to describe their daily routine; talk and write about their everyday lives, leisure; ask and answer questions about food and drink. Students should be able to give dates, use appropriately the vocabulary related to months in the year, make polite requests, describe places, travel and personal histories; choose a destination and give directions; discuss likes and dislikes.

- **English Language 3**

By the end of each level of this course determined by the placement test taken at enrolment, students are expected to be at different levels as determined by the Common European Framework (CEF) and should be able to understand and use familiar expressions and phrases aimed at the satisfaction of needs of a concrete type; ask and answer questions about personal identification and personal relations; talk and write about their everyday lives, leisure, entertainment, finance, problems; ask and answer questions about different phenomena including crime and natural disasters, invite and respond to invitations read and listen for gist, detail and comprehension; evaluate their own progress; participate in role plays and dialogues on familiar topics and produce a paragraph/ essay on topics related to the course material. By the end of this course students are expected to be at B1 level of the Common European Framework (CEF). They should be able to ask and answer questions about university degrees, job skills and situations; invite and respond to invitations. Students should be able to ask about or describe family relationships and marital status and they should be able to recognize and use appropriately vocabulary related to degrees and university education, art, travelling and sport.

- **English Language 4**

By the end of each level of this course determined by the placement test taken at enrolment, students are expected to be at different levels as determined by the Common European Framework (CEF) and should be able to understand and use familiar expressions and phrases aimed at the satisfaction of needs of a concrete type; ask and answer questions about personal identification and personal relations; talk and write about their everyday lives, leisure, entertainment, environment finance, problems; ask and answer questions about university degrees, job skills and situations. They should be able to evaluate their own progress; participate in role plays and dialogues on familiar topics and produce a paragraph/ essay on topics related to the course material. By the end of this course students are expected to be at B2 level of the Common European Framework (CEF); They are expected to be independent users of English language and to implement some of the following language functions: give advice; ask and answer questions about university degrees, job skills and situations; invite and respond to invitations, read and listen for gist, detail and comprehension.

- **English Language 5**

Academic English is a one semester course which aims to enable the students with skills which can facilitate their language learning and their study progress in an academic teaching and learning environment. The course should enable them to use those skills in both foreign language classroom as well as academic progress in content areas. The course incorporates language skills, study skills and generally applicable skills (listening, delivering oral presentations, constructing arguments) in specific assignments. Therefore, upon successful completion of the course, the students' proficiency level should be at C1 according to Common European Framework. As a result, the students should be able to deliver successfully oral presentation, participate in an online debate/ discussion forum stating their opinion and arguments and give feedback to others in a constructive manner. In addition, the students should be able to listen and read for gist and detail and write an argumentative paragraph and essay stating their opinion. They should and write a problem solution paragraph and essay. They should be able to present visual information in a form of Power Point poster presentations. The students should be able to identify main ideas and supporting evidence in a text and to analyse and identify topic sentences in a paragraph. They should be able to identify a purpose of a text, patterns of organization in a text and apply them in their own writing.

- **English for Information Technology 1**

This course is offered with the aim of improving the four main language skills such as reading, writing, listening and speaking in the content-specific area as well as revision and advancement of selected intermediate and upper-intermediate grammatical items and vocabulary in the field of computer sciences and technologies. This is done to enable students to comprehend more complicated texts in the mentioned area and enable them to communicate fluently with colleagues and experts in the field. Special attention is paid to the use of authentic materials in order to

follow the latest trends and achievements in this field.

- **English for Information Technology 2**

This course is offered with the aim of improving the four main language skills such as reading, writing, listening and speaking in the content-specific area as well as revision and advancement of selected intermediate and upper-intermediate grammatical items and vocabulary in the field of computer sciences and technologies. This is done to enable students to comprehend more complicated texts in the mentioned area and enable them to communicate fluently with colleagues and experts in the field. Special attention is paid to the use of authentic materials in order to follow the latest trends and achievements in this field.

- **Selected chapters in IT Skills**

The aim of this subject is: - To display the technical elements, the structure of the text and design of different papers during their studies. - To enable students to acquire IT skills knowledge that will be needed in preparing scientific papers, professional papers and presentations. - To practically apply IT skills.

- **Microsoft Office Access**

Microsoft Official Academic Course (MOAC) for Access 2016 provides hands-on experience to increase your personal productivity skills. This program is divided into fifteen lessons covering all product areas required to pass MOS exam 77-730.

- **Microsoft Office Excel**

Microsoft Official Academic Course (MOAC) for Excel 2016 provides hands-on experience to increase your personal productivity skills. This program is divided into fifteen lessons covering all product areas required to pass MOS exam 77-727.

- **Microsoft Office PowerPoint**

Microsoft Official Academic Course (MOAC) for PowerPoint 2016 provides the hands-on experience to increase your personal productivity skills. This program is divided into eleven lessons resources covering all product areas required to pass MOS exam 77-729.

- **Microsoft Office Word**

Microsoft Official Academic Course (MOAC) for Word 2016 provides hands-on experience to increase your personal productivity skills. This program is divided into eleven lessons resources covering all product areas required to pass MOS exam 77-725.

- **Web Creation**

The aim of this course is developing even a simple web page according to current standards, requires knowledge of Hypertext Markup Language (XHTML) and Cascading Style Sheets (CSS). Most of the websites also use images, whether in the form of banners, buttons, logos, photos or scans. Adobe Fireworks is built as a tool to create and manipulate images from the web and to allow the makers to optimize these images in order to reduce the file size. Firework also provides an excellent integration with Dreamweaver. This series provides a comprehensive introduction to XHTML, CSS and creating web graphics.

- **Digital Media Design**

The aim of this course is designing and processing raster and vector graphics through the leading programs Adobe Photoshop and Illustrator, as well as designing and publishing commercial materials for print using Adobe InDesign.

- **Google Education Apps**

Conceptual overview with hands-on tutorials for harnessing the educational potential of G Suite. It identifies learning principles that guide the effective use of G Suite to create learning environments that improve educational communication. This course is organized into a series of modules. The modules are attached to a collapsible menu available at google for education site that organizes the modules in roughly the same order in which they will be discussed in class.

- **IT Hardware and Software Fundamentals**

Students who complete this course will be able to describe the internal components of a computer, assemble a computer system, install an operating system, and troubleshoot using system tools and diagnostic software. Students will also be able to use various ICT applications and tools, explore the Internet, and address information systems security and issues relating to ethics and computer crime.

- **Introduction to Cybersecurity**

This course will cover the most important aspects of staying safe online, by providing knowledge that students better understand online security and start to protect their digital life, whether at home or school. Recognizing threats that could harm you online is as important as the steps you can take to prevent and or overcome these threats. The course will also provide definitions, in-depth information about types of malwares, including viruses and trojans, as well as concepts such as network security, cryptography, identity theft and risk management.

- **Introduction to Public Administration**

Public administration is an area of special scientific interest. The course Introduction to Public Administration will provide students with knowledge regarding the basic concepts of public administration. Special attention will be devoted to acquiring knowledge about the evolution of public administration, as well as the envisaged reforms of the public administration in our country. Furthermore, the students will have the opportunity to understand and critically analyze the phenomena's that public administration is challenged with. Since the study area of this course is subject to continuous change, a special focus will be given to new developments and the study of classical theories of public administration. In this course we will investigate the following concepts: definitions and basic knowledge about the principles and institutions of public administration, the role and importance of public administration in an organized society; genesis and historical development of public administration, public administration, organizational structures, functioning of institutions of administration public administration services; Decision Making in AP, public administration service for the protection and realization of human rights, public administration reforms in RNM etc.

- **Public Leadership and Organizational Development**

The course aims to enable students to identify how leaders and managers are developing and implementing the achievement of the mission and vision of an organization in the public sector; develop values required for long-term success and their application through appropriate activities and habits; how leaders and managers are personally involved in providing assurance that the systems for managing the organization will be developed and implemented. Also, about how the organization implements its mission and vision through a clear strategy based on the views of all interested parties, supported by all relevant policies, plans, goals and processes.

- **Introduction to Public Policies**

The Course aims to provide students easier understanding and mastery of public policy; its principles for creating and running a particular policy; and the analysis, implementation, evaluation and development of policy. The management of public policies is a discipline for problem solving that draws upon knowledge of basic theories and methodologies of social sciences, the social professions and the philosophy of politics.

- **Introduction to Law**

Aims of the course program: Students gain basic knowledge about the law and the State; Empower students in acquiring theoretical knowledge related to the various forms of the State; Critical review of the law as a social phenomenon; Encourage analytical review by students related to the problems now facing the State and the law in terms of globalization and European integration; At the end of the course students will be able to distinguish the basic forms of the State and the law; To explain the basic notions of the State and the law and their connection with real life; To gain a basic, introductory and general knowledge of the State and the law that will be needed for their further studies in general legal sciences;

- **Introduction to Criminalistics**

In this course, students will acquire and deepen their knowledge in criminalistics. This discipline in a wide sense contributes to fighting crime aiding its detection and prevention. The program of criminalistics will be elaborated in a theoretical and practical aspect (through consultation, reference literature, debates and discussions with students). The purpose of this course is to prepare and train the students for use and application of modern criminalistics tools and methods employed to detect and explain the various crimes as well as in regard to crime prevention.

- **Labour Law**

The Labor Law course will enable students: - to become familiar with issues that are an integral part of labor law, starting from the fundamental premise that each of us one day will be employed and therefore the knowledge of labor rights represent a struggle for a better quality of life; - to learn about various aspects of exercise of the rights and performance of duties and responsibilities from labor relations as well as legal institutions in the field of labor; - to study the labor relations in practice through the procedure of employment, entering into employment contract,

exercising and protecting the rights, the responsibility of employees, termination of employment i.e., termination of the validity of employment contract; - to create specific legal acts relating to institutions covered by the positive law in the field of labor relations in the Republic of North Macedonia; - to provide various forms of student participation and to incorporate the possibility of gaining more points from classroom the activity;

- **Human Rights and Freedoms**

The struggle for human rights begins with the historic efforts to identify them. Over time, the corpus of rights and freedoms that are incriminated by laws or international treaties is expanding but it certainly does not prove that the same are respected in practice. Human rights at first were considered as internal matters of states (under the principle of absolute sovereignty of states) and only in more recent times have gained the title of jus cogens norms. This course will study how to develop doctrine on human rights, types and categories of human rights and will be studied the relevant documents that regulate certain rights. The purpose of this course is: to introduce students to the concept of international law on human rights, implementation of the same, influence in the formulation of national policies; This will encourage students to critically reflect on the relationship between international law and national law; make them aware of current international events, how they affect the daily lives of people in the world; encourage students to contribute in matters of drafting laws for the protection of human rights.

- **Legal Writing and Reasoning**

The aim of the course is to provide the basic knowledge of legal writing and justification to the first-year students. In this course, there will be gained knowledge for the legal writing and reasoning principles and basic guidelines for it, by applying the various methods of legal writing of normative legal acts (regulations, laws, decisions, judgments, contracts, wills etc.) and acts (CV, claim, competition, application, notification, plaint etc.).

- **Assisted Reproductive Technology and Law**

This course aims to emphasize the fact that in modern society, there is no one universal, generally accepted model of family and parenting. By studying the subject 'Assisted reproductive technology and Law', students will gain knowledge about new artificial reproductive technologies that are part of contemporary natal policy. In more detail, students will be introduced to all artificial reproductive technologies, such as artificial insemination, in vitro fertilization, surrogate motherhood, the birth of children from a woman with sperm donation, posthumous reproduction, co-parenting, 'three parent' baby technique, cryopreservation of gametes or embryos. Students will have the opportunity to be informed that there are many other opportunities offered by science but are forbidden, for example, cloning, gender selection, improvement of the physical, intellectual or other capacities (eugenics) of the future child, etc. By studying this course students are expected to develop their critical thinking by debating the complex set of moral, ethical and legal dilemmas regarding these new reproductive technologies.

- **Domestic Violence**

Domestic violence is a social phenomenon of wide scale and widespread in contemporary society. It is present in all states and societies regardless of their development and emancipation. Immune to this phenomenon is neither our country nor the region in which we live. Therefore, law students through this course gain knowledge of what is domestic violence, the forms in which it is manifested, the legal arrangements in the country, the region and the international sphere as well as the ways of preventing it. Through this course, students at the end of the course will be able to identify domestic violence, identify criminal offenses that are incriminated in the Criminal Code as domestic violence, and develop critical thinking about this problematic. This course enables the future jurisdiction to handle issues of this sphere of high sensitivity as well as to provide the most adequate assistance and protection for the victims of these criminal offenses in the exercise of his future profession as a judge, prosecutor or lawyer.

- **Introduction to Computer Sciences**

Introduction to the intellectual enterprises of computer science and the art of programming. This course teaches students how to think algorithmically and solve problems efficiently. Problem sets inspired by the arts, humanities, social sciences, and sciences. Designed for concentrators and non-concentrators alike, with or without prior programming experience. Among the overarching goals of this course are to inspire students to explore unfamiliar waters, without fear of failure, create an intensive, shared experience, accessible to all students, and build community among students.

- **Internet Technologies**

The main objective of the course is to give students a practical knowledge of basic mechanisms, services and protocols of the global network - the Internet. The course provides mastering of the overall architecture of an effective, scalable and secure web page. The students will acquire deep technical knowledge of XML, XHTML (lists, tables, figures, multimedia and forms), CSS (formatting, styles and layouts), and JavaScript (variables, conditions, loops and functions).

- **Applied Probability and Statistics**

This course aims to provide an understanding of the basic concepts in probability, conditional probability and independent events. It will also focus on the random variable, mathematical expectation, and different types of distributions, sampling theory and estimation theory. Another objective of the course is to design a statistical hypothesis about the real-world problem and to conduct appropriate tests for drawing valid inference about the population characteristics. It is inevitable to have the knowledge of hypothesis testing for any research work. The course will provide an opportunity to learn Excel and MegaStat programming to a substantial extent, to specifically apply theoretical knowledge.

- **E-Commerce**

Course aims: - Understanding and applying the concepts of electronic commerce and electronic business. - Recognition of business needs for adaptation to constant and continuous changes in the environment, and recognition of the importance of incorporating information technology into the most important business processes, improving their current operational efficiency to transform it into a competitive advantage. - To develop strategic, administrative, and operational planning for new businesses, or to improve existing ones with their technologies. - Develop knowledge about the basics of E-Commerce, which are made possible by new Information Technologies - They recognize the need for the organization to continuously adapt to the changes occurring in the current business atmosphere. - Discover opportunities in the environment so that you can apply them in valid innovations and do business. - Analyze business to identify internal and external factors that can be modified to be able to move to an electronic business model. - Develop strategic, administrative, and operational planning for a new, or already existing business by establishing strategies that use information technology in the most important business processes, in order to improve their current operation and turn it into a competitive advantage. - Develop an analytical and technical foundation to understand the unpredictable world of e-commerce, by sharing three domains: o Economics: business plan, electronic banking and money, marketing and advertising, customer relationship management o Sociology: secrecy, protection of intellectual property, laws and regulatory initiatives o Technology: Internet infrastructure, network security, web services, mobile commerce network security, services, mobile commerce.

- **Introduction to Information Systems**

Aims of the course program: To learn the basic concepts and the terminology of Information Systems: - Basic Information Systems concepts: hardware, software, networks; - E-World: e-business and e-commerce; - Developing Processes; To learn about the Information Systems and technologies that improve business values and various processes inside organizations; Applying IS concepts with various managing disciplines, during analysis, interpretation, assessments and decisions; To understand the process of redesigning organizations by using information systems; To describe the role of information systems in decision making; To examine information security, ethical, and social issues; To be familiar with the Internet, electronic commerce, and e-business; To prepare students to work on small scale projects, individual or group work, who by nature could fall into these categories: case studies, scientific research project, development projects or internship projects;

- **IT Professional Ethics**

This course provides a comprehensive overview of the current ethical issues in Information Technology (IT) use. It examines an array of long-standing and emerging issues facing IT users ranging from free speech, privacy, intellectual property, hacking, and the digital divide, to ethics in social networking and online communities. The course discusses the ethical dilemmas and responsibilities of IT professionals, and promotes the critical examination and responsible usage of IT.

- **Albanian Language and Writing Culture**

The course, Albanian language and writing culture, is a synthesis of rules and guidelines for improvement of the skills for written and oral expression in Albanian. Students are expected to improve these skills by becoming familiar with the spelling and punctuation rules, some morphological norms, as well as the Albanian syntax, all in order to achieve proper use of the language. An accent will be put on motivating them for fluent speaking and raising their awareness for use of the Albanian pure standard language. Special attention will also be paid to encouraging students to advance the process of writing and increasing their understanding about the differences between specific genres. The issue of academic integrity (plagiarism) will also be tackled, as well as the specific terminology of the different areas of specialization. All these topics will be offered as separate lessons, that is, as rules, guidelines and exercises, which complement each other.

- **German Language 1-4**

After completing this course, students will be able to gain appropriate knowledge according to the European Language Framework (specifically and concretely determined by level). In addition, students are expected to become more autonomous and more responsible language learners. By the end of the course, students will be able to think

critically and make conclusions about different topics based on the texts that they have read, as well as to express their thoughts and opinions in written and spoken German.

- **Multiculturalism in Teaching English Language**

Students should be able to present their opinions regarding culture and globalization and the influence that these processes have in education. They should be able to discuss issues related to the themes of tolerance, understanding, and accommodating diversity. They will also work towards producing essays treating the issues of cultural relativism, stereotypes, prejudices, as well as the development of concepts like intercultural cooperation and multicultural education.

- **Intercultural Studies**

Having completed this course, the students will be able to identify global questions and problems from the perspectives of different cultures, the communication dynamics in the other cultures, the similarities and the differences between their values and those of other cultures, as well as the similarities and differences between their communication practices and those from other cultures. In addition, students are expected to become more aware of the stereotypes that society has for different cultures and as a result will better understand their place in the global community. The students will start thinking critically about topics related to their ethnicity, gender identity, class, religion, national origin, age and other demographic characteristics and their impact on the communication process. After finishing Intercultural Studies, the students will also gain communication skills for working in groups through participation in research projects and will acquire the necessary skills to present their research projects.

- **Critical Reasoning and Thinking**

At the end of this course, students will become able to improve the quality of their thinking by capturing the inherent structures of the act of thinking and by making them subjects to their intellectual and academic standards. They will develop strategies for decision making based on reflection, reason and logic. Through this course, students will learn the tendencies, approximations and assumptions on which their reflections are based, and the conditions and the outcomes derived from their ways of thinking. This reflective thought is the active, careful and persistent examination of all beliefs in the light of the fundamentals that support them and their conclusions. Students will be equipped with knowledge and skills needed to bring reasoned decisions which are required in everyday circumstances, and which are related to the jobs they will perform.

- **Public Relations and New Media**

The course focuses on the development of those communication skills and techniques that are essential for effective functioning in the era of globalization. Students will elaborate the process of globalization, social, political, economic and cultural aspects of modern phenomenon, the consequences and impacts in the communication sphere marked an era of postmodernism, particularly the impact of new social media, their structure, Multilanguage functions of social networks, the effects and consequences in the modern world communication realities.

- **Media and Society**

Media and Society introduces students to the discipline which studies the complex relationship between media and society, as well as the role of mass media as mediating technologies for mass and global communication. The main aims of this course are the political, economic, social and cultural implications of media on society.

- **Introduction to Economics and Business**

The primary purpose of this course is to develop a basic understanding of the major economic concepts and theories used in analyzing economic issues. This course is designed in a way to equip students with basic principles, concepts and techniques in doing economic analysis. At the end of the course, the students should be able to “think like an economist”. This course provides a survey of the principles of micro- and macroeconomics with a focus on applied managerial decision-making in a global setting. Upon completion of the course, students should be able to: utilize the demand and supply model to determine the impact of changes in demand or supply on price and quantity; define GDP and describe its measurement, uses, and limitations as a measure of economic wellbeing; define Inflation and describe its measurement, consequences, and how to adjust for it; as well as describe the role and tools of a central bank.

- **Principles of Management**

The purpose of this course is to familiarize students with the basics of management, its genesis, definition and basic principles which should be based on the work of any future manager. This course also aims to acquaint students with knowledge of the basic functions of management such as planning, organizing, coordinating, motivating and controlling. Mastery of this subject will provide students with the ability: - To learn the basics of management and to enable them to give concrete examples. - To be able to see the mastery of this subject as the need and acquiring

knowledge to be in the context of practical application of learning. - To think of an effective way will help them to face with business problems in their future life.

- **Business Communication**

Contents of the curriculum: In recent years more and more companies apply the techniques of business communication as a key tool to respond to competition in the global market. This subject is an attempt to improve the communication skills of students with theoretical and above all, and practical indication of the correct way of communicating in an organizational environment with employees and managers as well as holding meetings, interviewing, how to respond when interviewing, negotiating and motivating those around them.

- **Project Management**

The purpose of this course is to introduce students to the world of modern projects and their confrontation with the opportunities and challenges of real economic life in the creation of appropriate, real need projects. Specific objectives of the subject include how to determine a project (using several stages) and to emphasize the important role of project manager (understanding the need, field of action, activities for implementation, the complexity of modern design, etc.). Students will be trained on how to apply modern tools and techniques of modern project management in the transformation necessary or appropriate creative idea in a real and documented project that will make you be more inventive about themselves and more competitive labor market.

- **Business Plan**

The aim of the course is to assist students in understanding the behavior of conscious enterprise in modern economic conditions.

- **Corporate Social Responsibility and Ethics**

The aim of the course is to develop general theoretical knowledge of corporate social responsibility in modern economies and analyze the reflection of corporate social responsibility in the overall functioning of the enterprise.

- **French Language 1-2-3**

The purpose of this course is for students to strengthen their language skills and competencies, as well as to develop four communication competencies, particularly in the following areas: • to be able to express an opinion, • to be able to express their feelings, • to understand the essence of an expression, thought or idea, • to be able to argue and defend their opinion. • to manage different situations, • to maintain a simple and coherent speech, • to tell an event, • to talk about a dream or experience, • to present the reasons for a project or idea, • to communicate spontaneously.

- **Italian Language 1-2-3**

The purpose of the course is for students to get acquainted with the Italian culture, the Italian civilization and the Italian language. The idea is for students to know a slightly different reality, which may help them to become aware of themselves, as well as in creating a better picture for themselves and for their future. Corresponding to the level (from A1 to B2), which students choose, or the levels that they will follow in the semesters they have at their disposal for a free elective subject, the matter progresses deeper. The first level starts from basic settings such as: orthography (spelling), pronunciation, vocabulary for managing simple, everyday language situations (personal presentation, presentation of others, orientation in space and in time, communication expressions in a bar, restaurant, supermarket, on the market), and it is reaching more complex constructions in the continuing stages, which refer to the expression of attitude, desire, need, telling past events, talking about future actions, etc. Grammar is introduced inductively (through awareness of situations (audio recordings, videos, films, various texts) and conclusions), in which the students themselves play the key role, with their active participation in the lectures.

- **Academic Writing in English**

In this course, students' academic writing skills will be enhanced in a variety of ways. Students will be enabled to communicate their ideas in a clear, fluent and effective way in order to produce a piece of writing. Students' academic writing skills will be developed through activities that promote writing such as writing different types of paragraphs and essays. In addition, students will be introduced to paraphrasing and citing rules as well as will be made aware of what plagiarism is. Giving feedback on students' pieces of writing will involve self-correction, peer-correction and teacher-correction of content, organization and language errors.

- **Digital and Online Literacy**

Digital and Online Literacy is a one-semester course meeting 3 class hours per week, offered in undergraduate studies. The course is designed according to students' needs and it includes several 21st century skills related to using technology appropriately and effectively. The course will encompass the three categories of 21st century skills. By the end of the course students will be able to search for and access online information successfully using variety

of digital tools, critically evaluate the reliability of online resources and distinguishing between credible and untrustworthy sources, demonstrate understanding of ethical issues related to academic context, understand proper referencing in order to avoid plagiarism, learn how to effectively communicate in a professional manner, understand the basics of being safe online and the positive and negative aspects of creating an online identity, investigate cyber bullying and identify possible solutions for reducing online harassment.

- **Conversational English**

Conversational English is a one semester course designed for intermediate-level English speakers and above and will be available to students in all semesters. English is an international language that facilitates communication in a variety of contexts around the world, ranging from business meetings and transactions to casual conversations between friends and interactions during travel. Conversational English will build students' listening and speaking skills, providing grammar, vocabulary, pronunciation, and fluency practice needed for common types of spoken English interactions. This course will cover topics related to professional conversation, casual conversation, and everyday interactions, providing students with conversational confidence in a variety of contexts. Professional conversation will include formal and polite varieties of speech used in contexts such as work meetings or discussions with colleagues. Casual conversation will include practice with language used while socializing with friends or family and other informal situations and will include slang and informal speech. Everyday interactions will include conversations at stores, during travel, and asking for or providing assistance. Methods of learning will focus on practice and will include listening activities, dialogues, role-plays and simulations, debates, and discussions.

- **Communication Skills in a Professional Setting in English**

The purpose of the course is to develop the communication skills that are essential for effective functioning in the professional world in English. The course objectives focus on a wide range of professional settings and issues. Students will study the process for analysis of different communication situations and will accordingly comprehend them.

- **Fiction and Fun**

The course aims to explore a range of attractive and popular literary texts (novels, excerpts, readers and short stories) so as to understand and enjoy the characteristics of different and popular genres, including science fiction, young adult literature and fantasy. Among the course objectives, the following can be included: to develop students' confidence, fluency and interest in reading in English, to read different types of novels and respond thoughtfully and critically, verbally and in writing, by drawing connections between personal experience, world knowledge and/or other sources (lectures, readings, films) and the assigned text. In addition, the aims are to transfer advanced reading skills to the second language classroom and develop these skills, making the students better readers in both languages. Reading skills include skimming, scanning, predicting, guessing words from context and reading for detailed comprehension.

- **English Literature and Film**

Course aims: - to help students develop critical thinking skills through film analysis - to discuss, evaluate and write critical reviews - to critically analyze literary and informational texts - to discuss and analyze students' work and give peer review - to present different perspectives, support claim, use sensory language

- **Macedonian Language for Legal and EU terminology**

The aim of the course is to train students for language competence and language performance in the professional field (i.e., in the field of law and the EU). It is a learner-centered approach that is focused on developing communication skills in specific areas, ie deepening and strengthening the skills for advanced written and oral expression in a standard Macedonian language. The intended material includes content related to professional disciplines, as well as authentic documents and materials. Particular attention is paid to mastering professional terminology and its application in an appropriate language context and to the development of digital skills. Students are expected to become more autonomous in learning the language and to be able to think critically on various topics, as well as to acquire the ability to communicate in Macedonian in a multilingual and multicultural environment.

- **Ethics in Public Institutions**

Цели на предметната програма (компетенции) се студентите: - Да стекнат знаења и да ги разберат семантиката и концептите на етиката, стандардите на однесување, моралното расудување и моралната филозофија. - Да развијат став за позицијата на моралот во професионалниот живот. - Да формираат јасни ставови за правата и одговорностите на вработените во јавната-државната администрација. - Да имаат способност да се соочат со етички проблематичните ситуации. - Да имаат чувство за карактерот кој се бара во професијата на администраторот. - Да се запознаат со литературата за етиката во сферата на јавните институции. - Да бидат подготвени да употребуваат комуникативни алатки и да ги почитуваат етичките

стандарди во работата со државните институции и јавните актери. Objectives of the curriculum (competencies): - Has knowledge and understands the semantics and the concepts of morality to ethics, standards of behavior, moral judgment and moral philosophy. - Develop a position on the moral position in professional life. - Set up clear views on the rights and responsibilities of the employee in state-public administration. - Able to face ethical problem situations. - Has sense for the character that is required in the profession of administrator. - Is informed through literature, on ethics in the field of public institutions. Ready to use communication tools and to respect ethical standards in working with state institutions and public actors.

- **Programming in Java**

The main objective of the course is to give students a practical knowledge of basic mechanisms, services and protocols of the global network - the Internet. The course provides mastering of the overall architecture of an effective, scalable and secure web page. The students will acquire deep technical knowledge of XML, XHTML (lists, tables, figures, multimedia and forms), CSS (formatting, styles and layouts), and JavaScript (variables, conditions, loops and functions).

- **Programming in .NET**

This course aims to provide students with the necessary knowledge and practice of programming .NET applications. The different concepts covered are: - The basics of .NET programming (variables, types, conditions, loops, etc.); - Windows Forms applications, manipulating files, database access technologies and concepts (connections, commands, data readers, etc.); - ORM systems; - Development of web and mobile applications; - Reporting with Crystal Reports and Microsoft Reports; - Creating installation packages and software distribution methods;

- **Cryptography**

Cryptography provides important tools for ensuring the privacy, authenticity, and integrity of the increasingly sensitive information involved in modern digital systems. Nowadays, core cryptographic tools, including encryption, message authentication codes, digital signature, key agreement protocols, etc., are used behind millions of daily on-line transactions. In this course, we will unveil some of the "magic" of cryptography. Modern Cryptography uses mathematical language to precisely pin down elusive security goals, design primitives and protocols to achieve these goals, and validate the security of designed primitives and protocols using mathematical proofs based on clearly stated hardness assumptions. Therefore, to learn cryptography, it is essential to understand its mathematical underpinning. In this class, we will see the inner working of cryptography for several core cryptographic tools, from encryption, to message authentication codes, to hash functions, to digital signatures, etc.

- **Programming in Python**

The aim of this course is to introduce core Python programming basics, including data types, control structures, algorithm development, program design with functions and the fundamental principles of Object-Oriented Programming. In this course students will solve problems, explore real-world software development challenges and create practical and contemporary applications using web development frameworks.

- **Mobile Applications Development**

This course will cover the basic concepts of designing applications for interactive mobile devices. The goal is for students to learn about writing clear and efficient, personal and business applications using a large spectrum of programming techniques.

- **Game Programming**

The goal of this course is to introduce the principles of developing computer games, focusing on games that are used on web browsers. The students will learn how to create objects, to animate them, to introduce sounds and other techniques used in games. The course will also cover the design of interactive games that can receive user input, through keyboard, mouse or similar peripheral elements. The students will also learn about the introduction of basic artificial intelligence. All these techniques will be practiced with the development of popular games.

- **Parallel Processing**

This course is intended for students interested in the efficient use of modern parallel systems ranging from multi-core processors to large-scale distributed memory clusters. The course covers theoretical principles of parallel computing as well as different parallel programming techniques. It begins with a survey of common parallel architectures and types of parallelism and follows with an overview of formal approaches to assess scalability and efficiency of parallel algorithms and their implementations. In the second part, the course focuses on selected parallel programming techniques and APIs, including shared address space, many-core accelerators, distributed memory clusters and big data analytics platforms. Each component of the course involves solving practical problems on a corresponding parallel architecture.

- **Computer Network Management**

In this course students will study the principles and practice of systems administration and management, analyzing and designing networks in a real lab environment. Students will use cloud servers and virtualized machines to explore the efficiency and security of your systems and get insights into the practices of industry companies like Cisco. Coursework includes design, installation, configuration and management of local- and wide-area network hardware and software.

- **NoSQL Databases**

The course is a continuation with extension of the knowledge in field of databases. The focus is addressed in NoSQL databases and helps the student to complete its knowledge puzzle with the various database technologies. It starts with some concepts, principles and taxonomies in field on NoSQL databases and continues with NoSQL database technologies of different types. The course covers: the principles behind the NoSQL databases, modern distributed database theory, indexing and MapReduce programming model; architectures and common features of the main types of NoSQL databases (key-value stores, document databases, column-family stores, graph databases); explains of selected NoSQL database systems including practical experience; and other topics related to NoSQL databases. At the end of this course, students should be able to: • Understand NoSQL databases and technologies. • Understand distributed database systems and theory, • Understand indexes, MapReduce programming model, • Understand main types of NoSQL databases based on key-value stores, document stores, column-family stores and graph stores, and • Understand the difference between relational and NoSQL databases and important of use.

- **Mobile and Wireless Networks**

This course aims to provide a general overview of architectures and protocols for mobile and wireless communication. Topics that will be covered range from physical layer to application layer covering specifically the mobile and wireless networking fields. The topics on the subject include Wireless WANs and MANs, Wireless Internet, Wireless AdHoc Networks and protocols, Wireless Hybrid Networks and recent advances in Wireless and Mobile Networks. Application, design, performance analysis and development of mobile and wireless systems are investigated.

- **Digital Logic Design and Simulation**

This course provides students with a comprehensive overview of the fundamental concepts of classical digital design and demonstrates how digital circuits are designed and analyzed today. The aim is to introduce students to the modern digital hardware hierarchy and enlighten them with the most up-to-date computer hardware design methodologies. Also, the course content gives students a basic idea of how to design and simulate logic circuits and practically implement such circuits.

- **Numerical Methods**

This module is designed such that it can provide students with the basic concepts and methods from numerical computing. The primary intent is to provide students with a sound introduction to the numerical methods. They have a big application in solving different problems which can be solved just by using the computers, therefore solving numerical problems will help students not just to apply them in different other areas, but simply it will help them to become better computer scientists. After a brief look at the ways the numbers are placed and manipulated in computers we will deal with fundamental computational problems, such as solving the equations, system of equations followed by an approximation theory. We will deal with the accuracy of numerical solutions and also the aim is to evaluate the functions, numerical differentiation and integration.

- **Internet of things**

The goal of the course is to provide students with fundamental knowledge of core concepts of the Internet of Things. Throughout the course, students will be exposed to theoretical and practical aspects regarding the architecture and applications of sensor networks and 4G/5G systems. Students will be able to use learned concepts through analysis of architectures and computer communication technologies for wireless Internet applications in the most diverse domains such as: smart environments, industrial and home networks of devices, as well as application in sensor and actuator networks.

- **Introduction to Artificial Intelligence**

Introduction to the basics of artificial intelligence, intelligent agents, techniques for presenting knowledge and intelligent search and decision-making, game theory, formal logic, probability and logical reasoning systems, learning by observation, training of neurons and learning stimulation. Also, students will be familiar with the basic concepts of LISP.

- **Computer Security**

This course teaches principles of computer security from an applied viewpoint and provides hands-on experience with security threats and countermeasures. The course additionally covers principles and skills useful for making informed security decisions and for understanding how security interacts with the world around it. Applied topics include cryptography, authorization control, operating systems security, and web and network security. Other topics include general security principles, human factors such as trust and social engineering, the security of complex systems, and the economics of security. The course aims to balance theory and practice.

- **Cybersecurity**

In Cybersecurity, introduces the technology, operational procedures, and management practices needed for successful cybersecurity. Makes extensive use of standards and best practices documents that are often used to guide or mandate cybersecurity implementation. Going beyond these, he offers in-depth tutorials on the “how” of implementation, integrated into a unified framework and realistic plan of action. Each chapter contains a clear technical overview, as well as a detailed discussion of action items and appropriate policies. Cybersecurity aligns with the comprehensive Information Security Forum document “The Standard of Good Practice for Information Security,” extending ISF’s work with extensive insights from ISO, NIST, COBIT, other official standards and guidelines, and modern professional, academic, and industry literature.

- **Business Analytics**

Business Analytics teaches the fundamental concepts of modern business analytics and provides vital tools for understanding how data analysis works in today’s organizations. The course takes a comprehensive approach, examining business analysis from both descriptive and predictive perspectives. Students learn how to apply fundamental principles, communicate with analytics professionals, and effectively use and interpret analytics models to make better business decisions. As tools, among others, Excel will be used, strengthening the students’ skills in the program and the basic understanding of the basic concepts. Additionally, Analytic Solver as well as commercial data-mining tools will be used so that students are prepared to use these same tools when they graduate.

- **Learning Management Systems**

The course is aimed at introducing the Learning Management Systems (LMS) as the key tools that sustain the new educational approaches. Although these systems usually have their own specifics, yet from a broader point of view they do offer some similar functionality. These functionalities will be introduced and analyzed too. The aim of the course is also to build a broader overview of the LMS trends and needs. The course will also cover analysis of the LMS implementation in several HE institutions. The practical part of the course includes the creation of a course using the LMS authoring tools and conducting an online module using built-in technologies.

- **Digital Content Creation**

Course aims: Great content is the foundation of a successful digital marketing strategy. It can increase SEO (Search engine optimization) rankings, enhance brand and product awareness, and encourage the audience to buy a product or share information – but what makes truly effective online content? Therefore, the course focuses on how to create engaging content and the value of delivering the right message to the right audience at the right time, and consider the importance of tone, style, and format. With an understanding that content is planned with a specific purpose, you’ll learn how to asymptotically analyze content and gain digital content creation skills. The main aims to achieve at the end of the course by students are: 1. Be able to asymptotically analyze content. 2. Improve digital content creation skills. 3. Understand and use the most efficient tool to create digital content. 4. Define online ‘content’ and how content is planned with a specific intention 5. Critically examine online content and identify the messaging and intentions within it 6. Question the messaging and use of language in online content 7. Use practical strategies to communicate effectively online 8. Explore best practice in content media creation

- **Social Media in Education**

This course aims to introduce the students to a variety of existing, new and emerging concepts, strategies, and technologies utilized in today’s online environment. It covers various social networking platforms, content, and tools, and related security and privacy issues in social media that are used for educational purposes. Students will learn how to use social media to reach personal and professional goals for educational purposes.

- **Gamification of Learning**

Today’s students are very different from the ones of 20 years ago; not only they are digital natives but have new profiles and preferences. This is strictly linked with one of the main problems in modern education: the lack of motivation and engagement in the learning process. Gamification in education and Game Based Learning can be particularly effective to engage learners and promote active participation and motivation in the classroom and

outside. Participating in this course you will discover both how to integrate game-based mechanics and game thinking to turn the learning process as a whole into a game (Gamification) as well as practical apps and tools to use games as part of the learning process (Game Based Learning). Through a hands-on approach we will analyze and master together Game Based Learning apps and Gamification examples and we will reflect on how to use them with our learners and how to adapt the learning process towards our students' needs, preferences and attitudes.