Faculty of Engineering, University of Kragujevac
Computer Technology and Software Engineering

http://fin.kg.ac.rs/sr/

Courses during studies

- Mathematics 1 - Analytics, geometry, linear algebra, mathematical analysis
- Basics of electrical engineering - Electrostatics, electromagnetism, AD/CD
- Computer Tools: Business application of computers and the Internet, basics of programming in the C programming language, engineering computer tools, selected algorithms and practicum
- Engineering Mechanics: Analytical definition of engineering problems and their solution, basic concepts of statics, basic laws of kinematics, dynamics, mechanical waves, oscillatory motion and practicum
- Mathematics 2: Mathematical analysis, integrals, differential equations, Real functions of independent variables
- Practicum in the basics of electrical engineering: Basic measurements in electrical engineering, handling instruments and writing reports on laboratory work, basic software tools for analysis and simulation of electrical circuits
- Practicum in the basics of computer technology: Structures and functioning of switching networks, realization of complex switching networks using a visual simulator, theoretical knowledge of combinational and sequential networks. Multiplexer, demultiplexer, encoder, decoder, shifter, incrementer, decrementer, adders, arithmetic and logic unit, comparator, register and counter. Network design using the above.
- Basics of computer technology 1: Structure of switching networks, analysis and synthesis of combinational and sequential networks

- Algorithms and data structures: Complex algorithmic tasks, software source codes developed in a standard way, data structure organization, algorithmic complexity, memory principles, data structures, classes, searching, binary trees, linear data structures, graph algorithms
- Basics of entrepreneurial management and economics: basic concepts
- Mathematics 3: theory of integrals of functions of several variables, theory of series, theory of fields and differential geometry
- Basics of computer technology 2: Design of digital systems, Computer structure, Memory, Processor, UI, Program model, Data types, Addressing methods, Interrupt, Organization
- Architecture of computer systems: CISC and RISC architecture, Program model, Data types, Addressing methods, Interrupts, Interfaces, Vectoring and more
- Programming languages: Procedural programming - programming language C, Object-oriented programming, Programming in the Internet environment, WEB server, HTML, JAVA-SCRIPT, XML, Dynamic HTML documents, Programming language PHP, Database programming, MySQL, Latest trends .NET, C#, ASP.NET, SCV working environment
- Object-oriented programming: Basic principles of OOP programming, Java, theoretical and practical teaching, auditory exercises
- Signals and systems: Signal processing tools and theoretical support. MATLAB
- Electronics: Introduction to electronic components and practicum
- Numerical analysis and discrete mathematics: Algorithms of numerical analysis and methods of discrete mathematics
- Operating systems: Purpose and functions of operating systems, basic principles of operation, design and implementation of operating systems, process management. Processes and Threads. Synchronization and communication between processes. Memory management. ddress binding. Memory sharing. Memory organization and allocation.Virtual

memory. Input/output subsystem. System I/O services. I/O subsystem. File systems. File system interface. File system implementation.

- Computer basics of Internet: The principles of the layered TCP/IP architecture, familiarization with the architecture and Internet functioning mechanisms, advanced concepts, protocols and functioning algorithms. Some key Internet services and modern computer networks.
- Microprocessor systems: possibilities of modern microprocessors, techniques of designing and programming microprocessor systems, practicum (designing hardware for a given problem, programming the necessary software, documentation up to the level of components in the system), Platform: Microchip PIC, ARM
- Internet application programming: Client-side script programming, server-side script language, PHP, SQLite, XML, Functions, Classes, Objects, Sessions, Cookies, Files, Security, etc.
- Software engineering: Software process models, software documentation development, software cost estimates, structural and OO analysis in UML language, verification and maintenance
- Parallel computing systems: Principles of parallel programming, models, UMA and NUMA and systems, cache memory, protocols, CUDA
- Databases: basic concepts, data models, database types, software support, SQL design, Security
- Expert systems: Concepts and techniques, system implementation
- Design of information systems and databases: Information systems, Internet, www environment, e-business concepts, CASE tools, SQL, application design
- Digital signal processing - Basics of signal processing, MATLAB
- Digital electronics - Use of complex digital systems and circuits
- E-Business: Building an E-business system
- VLSI system design - Design and verification, VERILOG, principles of RISC processor design, FPGA technology

- Artificial intelligence - Designing and evaluating intelligent systems, MATLAB
- Software engineering 2 - Software modeling and design, UML and 13 types of diagrams