DESCRIPTION OF THE COURSE

Name of the course: **Analysis and design of logic circuits**	Code: **BpCST01**	Semester: **5**
Type of teaching: Lectures (L) Laboratory work (LW)	Hours per semester: L – 30 hours LW – 25 hours	Number of credits: **5**

LECTURER(S):
Assoc. Prof. Eng. Atanas Kostadinov, PhD (FEA), tel.: 032 659 726,
e-mail: kostadat@tu-plovdiv.bg
Technical University of Sofia, Plovdiv branch

COURSE STATUS IN THE CURRICULUM: Compulsory course of the curriculum for training students for bachelor's degree, specialty "Computer Systems and Technologies", professional field 5.3 Communication and computer technology, area 5. Technical sciences.

AIMS AND OBJECTIVES OF THE COURSE: The purpose of the course is for students to study and be able to apply the approaches, methods, and technical means for the analysis and synthesis of logic circuits and devices according to their needs and interests, to understand the operation of specific logic circuits, and to acquire new knowledge and opportunities in this subject area.

At the end of his studies, the student will:

• knows the conceptual apparatus related to the analysis and synthesis of logical circuits;

• defines the main concepts, quantities, indicators, and dependencies in the theory of the considered schematic solutions;

• knows the methods and means of analysis and synthesis of the studied logical circuits.

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DESCRIPTION OF THE COURSE: An introduction to the analysis and synthesis of logic circuits. Logical functions and gates - used graphic symbols, truth tables, and description with the Verilog language; Canonical and standard forms for representing logical functions. Logic minimization by Veitch (Karnaugh) maps. Typical logic circuits: decoders, multiplexers, and demultiplexers - descriptions with the Verilog language; Incompletely specified logical functions. Minimization of incompletely specified functions. Optimization of synthesized digital devices and systems; Hazards in combinational logic circuits. Race condition in hardware. Typical logic circuits: code converters, encoders, and priority encoders - descriptions with the Verilog language; Typical arithmetic digital circuits: arithmetic-logic devices (ALU), multipliers, and comparators - descriptions with the Verilog language; Non-volatile memory device (ROM) - structure and main types. Synthesis of logic functions with ROM. Verilog language memory descriptions; Midterm exam; Main types of flip-flops: D, RS, JK, and T- flip-flops - descriptions with the Verilog language; Registers - with serial input, with parallel input. Shift registers - reversible, circular, and linear Feedback Shift Register (LFSR) are described in the Verilog language; Types of counters. Descriptions with the Verilog language; Analysis and synthesis of logic circuits applying the structural approach (style) in the description of electronic devices using the Verilog language; Finite state machine diagram. Asynchronous and synchronous FSM. Moore and Mealy machine -description with the Verilog language; Application of artificial intelligence in the synthesis of logical circuits.

Generation of descriptions with the Verilog language of sample logic circuits and their subsequent analysis.

PREREQUISITES: Computer systems, Digital logic design.

TEACHING METHODS: Lectures will be given using a computer and a multimedia projector, and laboratory exercises will be performed with the preparation of reports.

METHOD OF ASSESSMENT: One academic hour (45 minutes) written test in the middle of the semester (10%), a two-hour written exam in the exam session of the semester (80%), and an assessment from the laboratory exercises (10%).

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY: 1. Mihov G. Digital Circuitry, fourth edition, Technical University of Sofia, 2020, ISBN 978-619-167-425-1; 2. Spasov G., Petrova G., Kostadinov A., Digital and microprocessor systems, TU-Sofia, 2023, ISBN 978-619-167-007-9; 3. Morris Mano M., Ciletti M., Digital Design: With an Introduction to the Verilog HDL, VHDL, and SystemVerilog, sixth edition, Pearson, 2018, ISBN 978-013-454-989-7; 4. Chin Wen-Long, Principles of Verilog digital logic design, CRC Press, 2022, ISBN 978-103-203-412-6.

DESCRIPTION OF THE COURSE

Name of the course: **Digital Design**	Code: **BpCST02**	Semester: **5**
Type of teaching: Lectures (L) Laboratory work (LW)	Hours per semester: L – 30 hours LW – 15 hours	Number of credits: **4**

LECTURER(S):
Assistant Prof. Eng. Boris Ribov, PhD, Tel: (+359) 32 659 757, e-mail: ribov@developer.bg
Technical University of Sofia, Plovdiv branch

COURSE STATUS IN THE CURRICULUM: Compulsory course of the curriculum for training students for bachelor's degree, specialty "Computer Systems and Technologies", professional field 5.3 Communication and computer technology, area 5. Technical sciences.

AIMS AND OBJECTIVES OF THE COURSE: Upon completion of the course, students must study and apply the approaches, methods and technical tools for analysis and synthesis of digital circuits and devices in accordance with their needs and professional interests, as well as to acquire new knowledge and opportunities in this subject area. At the end of their studies, students will:

- Know the conceptual apparatus related to the field of digital circuitry;

- Determine the main quantities, indicators and dependencies in the theory of the considered circuit solutions;

- Know the methods and means for analysis and synthesis of the studied circuit configurations.

DESCRIPTION OF THE COURSE: The main topics concern: Introduction to digital design. Different logic gates (LG) and their truth tables. Connecting LGs; Transistor-transistor Logic (TTL) – characteristics and parameters. The basic TTL circuit. Different TTL logic components – expanders, with open collector, three state circuits. Advanced TTL logic; CMOS logic – parameters and characteristics. CMOS inverter. Advanced CMOS logic. BiCMOS logic; Different counter types - classification and basic parameters; Frequency dividers. Modulo – n counters; Registers and shift registers – the main purposes and parameters. LFSR – Linear Feedback Shift Register; RC differentiator and integrator. Monostable multivibrator; Schmitt trigger (ST). Integrated circuits with ST; Oscillators. RC oscillators. Crystal clock oscillators; Digital-to-Analog Converters (DACs) – parameters and characteristics. Different types of DAC; Analog-to-Digital converters (ADCs) – parameters and characteristics. Different types of ADC; Finite state machines (FSM) – Moore and Mealy machines; Reconfigurable logic – historical path of development. Hardware description languages – VHDL, Verilog, SystemC. Programmable ICs produced by Xilinx and Intel.

PREREQUISITES: Semiconductor devices, Computer systems, Analysis and synthesis of logic circuits.

TEACHING METHODS: Lectures using a computer and a multimedia projector. Performing laboratory exercises with preparation of reports.

METHOD OF ASSESSMENT: One one-hour written test in the middle of the semester (10%), a two-hour written exam in the exam session of the semester (80%) and an assessment from the laboratory exercises (10%).

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY: 1. Mihov G. Digital Circuitry, fourth edition, Technical University of Sofia, 2010, ISBN 978-619-167-425-1; 2. Spasov G., Petrova G., Kostadinov A., Digital and microprocessor systems, TU-Sofia, 2012, ISBN 978-619-167-007-9; 3. Morris Mano M., Ciletti M., Digital Design: With an Introduction to the Verilog HDL, VHDL, and SystemVerilog, sixth edition, Pearson, 2018, ISBN 978-013-454-989-7; 4. Singh S. Digital logic design, BPB Publications, 2015, ISBN 978-81-8333-580-5.

DESCRIPTION OF THE COURSE

Name of the course: **Computer Peripherals**	Code: **BpCST03**	Semester: **5**
Type of teaching: Lectures (L) Laboratory work (LW)	Hours per semester: L – 30 hours LW – 15 hours	Number of credits: **4**

LECTURER(S):
Assistant Prof. Eng. Boris Ribov, PhD, tel.: (+359) 32 659757, e-mail: ribov@developer.bg
Technical University of Sofia, branch of Plovdiv

COURSE STATUS IN THE CURRICULUM: Compulsory curricula for training of students to obtain Bachelor's degree, specialty Computer Systems and Technologies.

AIMS AND OBJECTIVES OF THE COURSE: The aim of the course is to create knowledge about the computer systems, hardware and peripherals.

DESCRIPTION OF THE COURSE: The course covers: power supply in the computer systems, storage devices (Hard disk, SSD, NOR & NAND Flash memory), optical storage devices, printers, scanners, multimedia audio and video devices, monitors, video controllers, communication controllers (USB, RS232, RS485, Firewire, COM, LPT), etc.

PREREQUISITES: Good fundamental knowledge in the courses: Introduction to Programming, Computer Systems, Signals and Systems

TEACHING METHODS: Lectures, using slides, case studies, laboratory and course work, work in teams.

METHOD OF ASSESSMENT: One test examine at the end of the course.

INSTRUCTION LANGUAGE: Bulgarian/English

BIBLIOGRAPHY:

1. Иларионов, Р. Т. Компютърна периферия. Алмаматер Интернационал С., 2008.;

2. Thomson R. B.; Thomson B.F.; PC Hardware in Nutshell. Thirt eition, O'Reilly, 2003;

3. Гук, М. Интерфейсы ПК: Справочник Санкт-Перебург: Питер, 1999;

4. Barry M. Cook & Neil White. Computer Peripherals. Third edition, British Library Cataloguing

DESCRIPTION OF THE COURSE

Name of the course: **Operating systems**	Code: **BpCST04**	Semester: **5**
Type of teaching: Lectures(L) Laboratory work (LW) Course work (CW)	Hours per semester: L – 30hours LW – 25 hours	Number of credits: **5**

LECTURER(S):
Assoc. Prof. Eng. Ivaylo Atanasov, PhD (FEA), tel.: 659 729, e-mail: ivo_atan@tu-plovdiv.bg
Technical University of Sofia

COURSE STATUS IN THE CURRICULUM: Compulsory subject from the curriculum for training of students to obtain Bachelor's degree, specialty Computer systems and technologies, Professional orientation 5.3 Communication and computer technique, Field 5 Technical Sciences.

AIMS AND OBJECTIVES OF THE COURSE: The "Operating systems" course aims to train students the basics of operating systems' structure and functioning. The main topics of studying are processes and threads, scheduling algorithms, memory management, file systems. At the end of the course the students should be able to create, manage and synchronize threads and processes, be aware of virtual memory management – replacement and allocation algorithms, working with the file systems APIs.

DESCRIPTION OF THE COURSE: Main topics: Operating systems – structure and modules. Processes and threads – basic terms. Working with processes and threads. Scheduling. Synchronization and synchronization primitives. Memory management – memory hierarchy. Virtula memory with paging – page table, page fault, page replacement algorithms. Virtual memory with segmentation and segmentation with paging. File systems – structure, main modules. File allocation methods, directory management, file system APIs.

PREREQUISITES: Fundamentals of Programming Languages, Synthesis and analysis of algorithms.

TEACHING METHODS: Lectures, using slides, case studies, laboratory and course work preparation and defence.

METHOD OF ASSESSMENT: Two assessments at mid and end of semester (65%), laboratories (10%), course work (25%).

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY:1. Tanenbaum, A., Modern Operating Systems, 3rd Ed, Prentice Hall, 2007; 2. Silberschatz, A., P. Galvin, G. Gagne, Operating Systems Concepts, 9th Ed, John Wiley & Sons, 2012; 3. Stallings, W., Operating Systems: Internals and Design Principles, 7th Ed, Prentice Hall, 2011; 4. Sedgewick, R., K. Wayne, Algorithms, 4th Ed., 2011; 5. Arpaci-dusseau, R., A. Arpaci-dusseau, Operating Systems: Three Easy Pieces, University of Wisconsin, 2013; 6. Love, R., Linux Kernel Development, 3rd Edition, Addison-Wesley, 2010

DESCRIPTION OF THE COURSE

Name of the course: **Bases of computer graphics**	Code: **BpCST05**	Semester: **5**
Type of teaching: Lectures (L) Laboratory work (LW)	Hours per semester: L – 30 hours LW – 30 hours	Number of credits: **5**

LECTURER(S):
Prof. Ph.D. Petya Pavlova (FEA), tel.: 0895587444,e-mail: p_pavlova@tu-plovdiv.bg
as.prof. Veselka Petrova – Dimitrova PhD (FEA), Dep. CST, e-mail: vpetrova@tu-plovdiv.bg
as. prof. Teodora Mecheva, PhD, (FEA), Dep. CST, e-mail: teodora_mecheva@tu-plovdiv.bg
Technical University of Sofia, branch Plovdiv,

COURSE STATUS IN THE CURRICULUM: Compulsory subject from the curriculum for training of students to obtain Bachelor's degree, specialty Computer systems and technologies, Professional orientation 5.3 Communications and computer engineering, Field 5 Technical Sciences.

AIMS AND OBJECTIVES OF THE COURSE: The aim of the course is to create knowledge about the mathematics and basic methods and means used in raster and vector graphics, and to create practical skills in application of standard program libraries.

DESCRIPTION OF THE COURSE: The main topics concern: Raster graphics, image presentation, formats color models, methods of rendering; Curves description; Projective geometry and geometrical space transformations. 2D and 3D description of graphical objects: wire models, solid block models, structure models, textured models. Lightening and coloring of computer-generated objects in images.

PREREQUISITES: Good knowledge in: Mathematics I, Fundamentals of Programming Languages, Platform Independent Programming Languages.

TEACHING METHODS: Lectures using slides and multimedia presentations; laboratory exercises using standard graphic libraries GDIPlus and OpenGL in Visual C for the synthesis of static and moving computer images.

METHOD OF ASSESSMENT: Exam during the regular session (50%) laboratory work (50%).

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY:
1. Павлова П. „Основи на компютърната графика - учебник“, изд. ТУ София, 2016. 2. Павлова П. „Ръководство за лабораторни упражнения по основи на компютърната графика“, изд. ТУ София, 2016. 3. Лукипудис Е. Компютърна графика и геометрично моделиране част I. В равнината, изд. СУ “Кл. Охридски”,София, 1996. 4. Foley J., A. van Dam, St. Feiner, J. Hughes. Computer Graphics Principles and practice, Second edition, Addison-Wesley Pub. 1990. 5. Александров А., А.Коралски, Б. Бинев. 3D ray tracing & animation. AlexSoft.София 1995. 6. Editor Nobuhiko Mukai, Computer Graphics, 2012 – open access book 7. Hughes J., A. van Dam M.McGuire, D. F. Sklar, J. Foley, St. Feiner, K. Akeley. Computer Graphics: Principles and Practice, 3rd edition, 2013 – e-book. 8. Pratt M., G. Humphreys. Physically based rendering – From theory to implementation Second edition, Morgan Kaufmann, 2010. 9. http://www.geometryalgorithms.com/Archive/algorithm_0108/algorithm_0108.htm 10. http://www.siggraph.org/education/materials/HyperGraph/raytrace/rtinter0.htm 11. https://www.courses.psu.edu/art/art201_jxm22/tutorials.html

DESCRIPTION OF THE COURSE

Name of the course: **Programming projects**	Code: **BpCST06**	Semester: **5**
Type of teaching: Lectures (L) Laboratory work (LW) Course work (CW)	Hours per semester: L – 30 hours LW – 25 hours	Number of credits: **5**

LECTURER(S):
Assoc. Prof. Eng. Ivaylo Atanasov, PhD (FEA), tel.: 032 659 729, e-mail: ivo_atan@tu-sofia.bg
Technical University of Sofia Plovdvi branch

COURSE STATUS IN THE CURRICULUM: Compulsory subject from the curriculum for training of students to obtain Bachelor's degree, specialty Computer System and Technologies, Professional orientation 5.3 Communication and Computer Equipment, Field 5 Technical Sciences.

AIMS AND OBJECTIVES OF THE COURSE: The course aims to provide students with systematic knowledge in the field of real programming projects, considering general and specific elements of the organization, structure, construction, debugging and testing of such projects. A particular focus is set on these elements of programming languages, that are specifically designed to provide and implement the complex structure of modern programming projects, and hence issues related to the internal machine representation of data and algorithmic components of programs.

DESCRIPTION OF THE COURSE: The main topics concern: The structure of programming projects - single-module, multi-module, single-language, multi-language, groups of languages, inter-language interface; Organization of programing projects - levels, meta-modules, build procedures; Resources in projects; Models of execution - direct (machine), interpreter, virtual machine; Types of libraries and usage modes; Models of development and tools; Source control and versioning; Internal representation of data structures and code fragments; Internal implementation of the inter-language interface.

PREREQUISITES: Introduction in Programming; Fundamental Programming Languages; Platform-Independent Programming Languages; Synthesis and Analysis of Algorithms; Computer Systems.

TEACHING METHODS: Lectures with traditional and electronic tools for teaching; laboratory exercises with reports; course work with end-of-semester defense. All teaching forms are adapted for attended and distant teaching.

METHOD OF ASSESSMENT: This course comprises of ongoing assessment during the semester. The overall grade is an aggregation of the test (60%), the lab-works grades (20%), and the defence grade of the coursework (20%).

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY: 1. Harper, Robert, Programming Languages: Theory and Practice, Carnegie Mellon University, 2005 ; 2. Paquet, Joey, Comparative Studies of Programming Languages, Lecture Notes, 2010; 3. Плачков И., “Програмни езици и програмни системи – Инженерен подход”, Унисофт, Пловдив, 1998..

DESCRIPTION OF THE COURSE

Name of the course: **Project (by choice from subjects № 28, 29, 30, 32)**	Code: **BpCST07**	Semester: **5**
Type of teaching: Course project	Hours per semester: L – 0 hours S – 0 hours LW – 0 hours	Number of credits: **2**

LECTURER(S):
Assoc. Prof. Eng. Nikolay Kakanakov, PhD (FEA), tel.: 659 765, e-mail: kakanak@tu-plovdiv.bg
Technical University of Sofia Plovdiv branch

COURSE STATUS IN THE CURRICULUM: Compulsory subject from the curriculum for training of students to obtain Bachelor's degree, specialty Computer systems and technologies, Professional orientation 5.3 Communications and computer engineering, Field 5 Technical Sciences.

AIMS AND OBJECTIVES OF THE COURSE: Development of the skill of the students to use the knowledge from the studied ICT subjects.

DESCRIPTION OF THE COURSE: Practical implementation of a project in a subject from the current semester (by choice from № 28, 29, 30, 32).

PREREQUISITES: The selected subject must be elected if its elective.

TEACHING METHODS: Independent practical task implementation with documentation/description and defense.

METHOD OF ASSESSMENT: Course project.

INSTRUCTION LANGUAGE: Bulgarian

DESCRIPTION OF THE COURSE

Name of the course: **Sports**	Code: **FaSPR05**	Semester: 5
Type of teaching: Lectures (L) Laboratory work (LW)/Seminars (S) Self-Study (SS)	Hours per semester: L – 0 hours S – 0 hours SS – 30 hours	Number of credits: 1

LECTURER(S):
Sen. Lect. Daniel Vladimdirov, PhD (FEA), tel.: 032 659 646, e-mail: danielv@tu-plovdiv.bg
Sen.Lect. Petar Doganov, PhD (FEA), tel.: 032 659 648, e-mail: pdoganov@tu-plovdiv.bg
Sen.Lect. Boris Spasov, PhD (FEA), tel.: 032 659 647, e-mail: boris_spassov@tu-plovdiv.bg
Technical University of Sofia

COURSE STATUS IN THE CURRICULUM: Facultative subject from the curriculum for training of students to obtain Bachelor's degree, specialties "Computer Systems and Technologies", 5.3 Computer and communication technique, Field 5 Technical Sciences.

AIMS AND OBJECTIVES OF THE COURSE: Targeted at further developing of students' physical activities, skills and hygiene habits through effective methods of physical education, improving their mental and physical performance.

DESCRIPTION OF THE COURSE: The knowledge and skills in Physical Education and Sports develop a wide range of motor skills and habits, help the hardening of the body and contribute to the moral development of students. The enhancement of physical skills is carried out through:

1. General Physical Preparedness (GPP) – in these seminars the students develop a wide range of motor skill and habits; work to improve strength, speed, endurance, flexibility, structure and skill; increase resistance to unfavourable environmental factors; develop their physical qualities and experience.

2. Sports-Specific Physical Preparedness (SPP) – students improve their sport skills and habits in a specific sport and gain experience through participation in competitions; work to improve strength, speed, endurance, flexibility, structure and skill; increase resistance to unfavourable environmental factors; develop their physical qualities and experience.

PREREQUISITES: The curriculum presumes the minimum of knowledge and skills acquired at secondary school.

TEACHING METHODS: Seminars in accordance with the curriculum in PE and Sport.

METHOD OF ASSESSMENT: Evaluation is based on functional tests at the end of semester. Lecturer's signature is required at the end of semester.

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY: 1. Владимиров В. Туризъм и ориентиране. Методическо ръководство за студентите от ТУ София, филиал Пловдив. Издателство на ТУ - София. 2010.

DESCRIPTION OF THE COURSE

Course Title: **Foreign Language**	Code: **FaBpCST02**	Semester: **5**
Type of Teaching: **seminars**	Contact hours per semester: **S – 30 hours**	Number of credits: **2**

LECTURERS:	**Telephone:**	**E-mail:**
Sen. Lect. Konstantina Nyagolova (FME, English)	0887276513	konstantinanik@yahoo.com
Sen. Lect. Nadya Popova (FME, English)	659 707	popovanadia@yahoo.com
Sen. Lect. Anet Arabadjieva (FME, English)	0892231353	anet2003@abv.bg
Sen.Lect. Nadezhda Geshanova (FME, English)	0889314932	geshanova@tu-plovdiv.bg
Sen.Lect. Daniela Valeva (FME, English)	0897899039	daniela.valeva89@gmail.com

COURSE STATUS IN THE CURRICULUM: Optional course in the curriculum of the ***Bachelor Degree Programme in Computer Systems and Technologies***, Professional qualification 5.3 Communications and Computer Technologies, Professional field 5 Technical Sciences.

COURSE OBJECTIVES: The course is targeted at further developing of students' language knowledge and practical skills in their specific professional field.

COURSE DESCRIPTION: The course is taught at language levels determined through placement tests, based on the compulsory foreign language course taken in Year 1 at TU – Sofia. No absolute beginner groups are formed. The course focuses on the further development of the four language skills in the domain of the students' major subject *Computer systems and technologies.*

PREREQUISITES: Completed compulsory foreign language course **LNG12** and **LNG12** in Year 1.

TEACHING METHODS: Seminars targeted at further development of the four language skills through individual and team work using audio and video, as well as multimedia.

METHOD OF ASSESSMENT: Evaluation is based on continuous assessment and students get a grade at the end of the semester.

LANGUAGE OF INSTRUCTION: English

LITERATURE RECOMMENDED:

1. *English for computing, Oxford University Press*
2. *Technical English, Pearson Longman*
3. *Technical English for Professionals, Mark Ibbotson, Oxford University Press*
4. *Career Paths: Computer Engineering, Virginia Evans,Jenny Dooley,Vishal Nawathe, Express Publishing*
5. *Check Your Vocabulary for: Computing, David Riley, Peter Collin Publishing Ltd*

DESCRIPTION OF THE COURSE

Name of the course: **Computer architectures**	Code: **BpCST08**	Semester: **6**
Type of teaching: Lectures (L) Laboratory work (LW)/Seminars (S)	Hours per semester: L – 30 hours LW – 30 hours	Number of credits: **5**

LECTURER(S):

Assoc. prof. eng. Maria Marinova, PhD (FEA), tel.: 965 727, e-mail: m_marinova@tu-plovdiv.bg

Technical University of Sofia, Plovdiv branch

COURSE STATUS IN THE CURRICULUM: Compulsory facultative subject from the curriculum for training of students to obtain Bachelor's degree, specialty Computer Science and Technologies, Professional orientation 5.3 Communications and Computer Engineering.

AIMS AND OBJECTIVES OF THE COURSE: The aim of the course is to create knowledge about *Computer Architectures*: what is computer architecture and learn about basic components of modern processor architectures; what is datapath and how it executes instructions; out-of-order issue and execution in superscalar and multi-core processors; heterogeneous architectures and CUDA architecture; different type of instruction dependencies; the detail observation of hierarchy of memories; bottlenecks in computer architectures.

DESCRIPTION OF THE COURSE: The main topics concern: Functional model of an architecture; „hot and cold spots“ in processors; cache memory – functions of mapping, cache coherent protocols, placement polices, logical and physical caches; trace caches; superscalar processors – instruction level parallelism, instruction dependencies, issue polices, organization of register files; ROB; architectures with thread-level parallelism; historical view of different project for non-traditional architectures (multiscalar, pre-execution, speculative execution, slip-stream, PIM); multi-core architectures, simultaneous multithreading vs hyper threading; datapath of execution of instructions; prefetching of branch instructions, different branch predictors; heterogeneous processors with GPUs, etc.

PREREQUISITES: Computer systems, Analysis and design of logic circuits, Digital Circuit Technique.

TEACHING METHODS: Lectures, using slides, case studies, laboratory and course work, work in teams, protocols and course work description preparation and defence.

METHOD OF ASSESSMENT: One exam at the end of semester (85%), laboratories (15%).

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY:
1. J. Hennessay, D. Patterson, Computer Architecture. A Quantum Approach. 2020, 2. Patterson, J. Hennessay, Computer Organization and Design. The Hardware/Software Interface.2020, 3. Stallings, Computer Organization and Architecture, Design for Performance. 2015, 4. L. Null, J. Lobur, The Essentials of Computer Organization and Architecture, 2018, 5. D. Harris, S. Harris, Digital Design and Computer Architecture, Second Edition. 2013, 6. J. Shen, M. Hipasti, Modern Processor Deign. Fundamentals of superscalar Processors. 2013.

DESCRIPTION OF THE COURSE

Name of the course: **Programming Environments**	Code: **BpCST09**	Semester: **6**
Type of teaching: Lectures (L) Laboratory work (LW) Course work (CW)	Hours per semester: L – 30 hours LW – 30 hours	Number of credits: **5**

LECTURER(S):
Assoc. Prof. Eng. Velko Iltchev, PhD (FEA), tel.: 032 659 726, e-mail: iltchev@tu-sofia.bg
Technical University of Sofia

COURSE STATUS IN THE CURRICULUM: Compulsory subject from the curriculum for training of students to obtain Bachelor's degree, specialty Computer System and Technologies, Professional orientation 5.3 Communication and Computer Equipment, Field 5 Technical Sciences.

AIMS AND OBJECTIVES OF THE COURSE: The students will gain learning as regards: the major programming environment architectures, the process of designing and developing of the MS Windows based applications at various levels: the API level using C, the C++ oriented MFC library, and the MS .Net Framework using C#. The students are introduced to many MS Visual Studio capabilities for development at high professional levels. The lab-works are intended to train the students in MS Windows application development with MS Visual Studio.

DESCRIPTION OF THE COURSE: MS Windows programming model; Overview of the Win32 API level; Event handling at the API level – messages, message loop, message queues; Resources and access to resources; Windows and graphical interface; Common dialog boxes and controls; MFC library and base classes description; Event handling at the MFC level; MFC and API levels congruence and interoperation; MFC document/view architecture; MS .Net Framework - major organizational concepts and structure; .Net Framework and API levels congruence and interoperation; Multi-threaded programming at the various levels.

PREREQUISITES: Fundamental Programming Languages; Platform-Independent Programming Languages; Synthesis and Analysis of Algorithms; Operating Systems, Programming Projects.

TEACHING METHODS: Lectures with traditional and electronic tools for teaching; laboratory exercises with reports; course work with end-of-semester defense. All teaching forms are adapted for attended and distant teaching.

METHOD OF ASSESSMENT: This course ends with a final exam, consisting of open and closed test questions and programming task. The overall grade is an aggregation of the exam grade (60%), the lab-works grades (20%), and the defence grade of the coursework (20%).

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY: 1. Horton, Ivor, Beginning Visual C++ 2013, Wrox, 2014, ISBN 978-1-118-84571-4; 2. MFC Tutorial, Tutorialspoint, 2016; 3. Villela, Roger, Pro .NET Framework with the Base Class Library, APress, 2019, ISBN: 978-1-4842-4190-5.

DESCRIPTION OF THE COURSE

Name of the course: **Object-Oriented Programming**	Code: **BpCST10**	Semester: 6
Type of teaching: Lectures (L) Laboratory work (LW) Course work (CW)	Hours per semester: L – 30 hours LW – 30 hours	Number of credits: 5

LECTURER(S):
Assoc. Prof. Eng. Velko Iltchev, PhD (FEA), tel.: 659 726, e-mail: iltchev@tu-plovdiv.bg
Technical University of Sofia

COURSE STATUS IN THE CURRICULUM: Compulsory subject from the curriculum for training of students to obtain Bachelor's degree, specialty Computer Systems and Technologies, Professional orientation 5.3 Communication and Computer Technique, Field 5 Technical Sciences.

AIMS AND OBJECTIVES OF THE COURSE: To introduce the students in object-oriented programming and to give them experience in development of software applications, using object-oriented programming languages and platforms.

DESCRIPTION OF THE COURSE: Main topics: Scope and visibility of variables. Member functions. Overloaded functions. Constructors and destructors. Special constructors. Creating and destroyng complex objects: using member initialization lists, initialization order. Chaining constructor calls. Chaining destructor calls. Creating arrays of objects: destructors and arrays of objects, implicit array initialization via default constructor, partial array initialization. Creating and destroying dynamic objects. Static data members. Static member functions. Inline functions. Friend functions. Friend classes. Cooperated classes. Inheritance: inheritance versus composition, assignment compatibility rule. Polymorphism: static versus dynamic function binding, overriden versus virtual functions, passing polymorphic objects as function arguments. Virtual constructors and destructors. Abstract classes. Operator functions: defining unary and binary operator functions through member and nonmember functions; restrictions on operator functions; type conversion operator functions. Object-oriented and component programming in environments, which support events.

PREREQUISITES: Platform-Independent Programming Languages

TEACHING METHODS: Lectures, using slides, case studies, laboratory and course work, work in teams, protocols and course work description preparation and defence.

METHOD OF ASSESSMENT: Written exam with a duration of 2 school hours, with 3 tasks to solve them in program code in C++ (62%), laboratories (18%), course work (20%).

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY: **1.** Stroustrup B., The C++ Programming Language (4-th Edition), Addison-Wesley, ISBN: 0-321-56384-0, 2013. **2.** Gregoire M., Professional C++ (5th Edition), Wrox, ISBN: 1-119-69540-6, 2021 **3.** Deitel P. & Deitel H., C++20 for Programmers, Pearson, ISBN: 0-136-90569-2, 2021 **4.** http://docs.embarcadero.com/products/rad_studio

DESCRIPTION OF THE COURSE

Name of the course: **Microprocessor systems**	Code: **BpCST11.1**	Semester: **6**
Type of teaching: Lectures (L) Laboratory work (LW)/Seminars (S)	Hours per semester: L – 30 hours S – 0 hours LW – 15 hours	Number of credits: **5**

LECTURER(S):
assoc. prof. eng. Mitko Shopov, PhD (FEA), tel.: 659 765, e-mail:mshopov@tu-plovdiv.bg
prof. eng. Grisha Spasov, PhD (FEA), tel.: 659 724, e-mail: gvs@tu-plovdiv.bg
Technical University of Sofia, branch Plovdiv

COURSE STATUS IN THE CURRICULUM: Compulsory elective subject from the curriculum for training of students to obtain Bachelor's degree, specialty Computer Systems and Technologies, Professional orientation 5.3 Computer systems, complexes and networks, Field 5 Technical Sciences.

AIMS AND OBJECTIVES OF THE COURSE: After completing the course, students are expected to be familiar with the model of programming microprocessor systems, to create low-level programs and programs developed as a mixture of intermediate (C) and low-level languages (assembly language), to program the input-output subsystem (device drivers) using the Intel x86 family of microprocessors and the Linux operating system.

DESCRIPTION OF THE COURSE: The main topics concern: Intel x86 programmable model; Assembly language; Interrupt handling; Macros and procedures; System stack; Sharing assembly language and higher level languages; Memory organization - virtual memory and virtualization; I/O subsystem; System buses; System-level communication – Interfaces; System level programming – device drivers.

PREREQUISITES: Introduction to Programming, Basic Programming Languages, Computer Systems, Operating Systems, Computer Peripherals.

TEACHING METHODS: Lectures, using slides, case studies, laboratory and course work, work in teams, protocols preparation and defense.

METHOD OF ASSESSMENT: One assessment test at the end of semester (50%), laboratory work (20%) and course work (30%).

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY: 1. G. Spasov, M. Shopov, V. Spasova, N. Kakanakov, „Guide for laboratory exercises in Microprocessor Systems“ Technical University of Sofia, 2013, ISBN: 978-619-167-021-5; 2. S. Dandamudi, Guide to Assembly language programming in Linux, Springer, 2005, ISBN: 978-0-387-25897-3; 3. J. Corbet, A. Rubini, and G. Kroah-Hartman. “Linux Device Drivers, Third Edition” O'Reilly, 2005, ISBN: 978-0-596-00590-0.

DESCRIPTION OF THE COURSE

Name of the course: **Modern Java technologies**	Code: **BpCST11.2**	Semester: **6**
Type of teaching: Lectures (L) Laboratory work (LW)	Hours per semester: L – 30 hours LW – 15 hours	Number of credits: **5**

LECTURER(S):
Assoc. prof. eng. Mitko Shopov, PhD (FEA), tel.: 659 765, e-mail: mshopov@tu-plovdiv.bg
Assoc. prof. eng. Mariya Marinova, PhD (FEA), e-mail: m_marinova@tu-plovdiv.bg .bg
Technical University of Sofia, branch Plovdiv

COURSE STATUS IN THE CURRICULUM: Compulsory elective subject from the curriculum for training of students to obtain Bachelor's degree, specialty Computer Systems and Technologies, Professional orientation 5.3 Computer systems, complexes and networks, Field 5 Technical Sciences.

AIMS AND OBJECTIVES OF THE COURSE: At the end of the course the students are expected to know the basic Java programming and some of the modern Java technologies.

DESCRIPTION OF THE COURSE: Main topic: Introduction to Java programming. Java platform; Basics of Java VM. Basic principles of Java VM operation; Collections, I/O streams and file handling; Multithreaded programming; Network programming; Connecting to a database; JEE architecture; Enterprise Java Beans (EJB) component model architecture; HTTP, REST, JSON; Spring application framework; Lambda expressions and Stream API; Reactive programming.

PREREQUISITES: Introduction to Programming, Basic Programming Languages, Platform Independent Programming Languages, Object Oriented Programming.

TEACHING METHODS: Lectures using multimedia, demo programs and laboratory exercises. Development of individual and group tasks.

METHOD OF ASSESSMENT: One test assessment at the end of the semester (60%), laboratories (20%), course work (20%).

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY: 1. Lecture notes in the electronic platform; 2. Cay Horstmann, Core Java Volume I—Fundamentals, 11th edition,2018; 3. Joshua Bloch, Effective Java, 3th edition, 2018; 4. Alex Breter, Spring MVC Cookbook, 2016; 5. Daniel Liang, Introduction to Java Programming and Data Structures, 7th edition,2018.

DESCRIPTION OF THE COURSE

Name of the course: **Embedded Systems**	Code: **BPCST12.1**	Semester: **6**
Type of teaching: Lectures (L) Laboratory work (LW)	Hours per semester: L – 30 hours LW – 15 hours	Number of credits: **4**

LECTURER(S):
Assistant Prof. Eng. Boris Ribov, PhD, tel.: (+359) 32 659757, e-mail: ribov@developer.bg
Technical University of Sofia, branch of Plovdiv

COURSE STATUS IN THE CURRICULUM: An compulsory elective subject for the Computer Systems and Technologies students admitted to the bachelor program. Computer Systems and Technologies Department belongs to the Electronics and Automation Faculty (EAF). EAF is a part of the Technical University – Sofia, Plovdiv branch.

AIMS AND OBJECTIVES OF THE COURSE: After finishing the course, the students will get knowledge about the fundamental principles and methodologies connected to the embedded systems design.

DESCRIPTION OF THE COURSE: The main topics are listed bellow – Embedded systems design – fundamentals principles; PCB (Printed Circuit board) design. Basic requirements and technologies used in PCB design. CAD (Computer-aided design) – CAM (Computer-aided manufacturing) systems for PCB design. Introduction to CAD - OrCad; Cross compilers – architecture and programmer technologies. The storing of the software modules into the memory. Runtime module; Embedded system busses design. The way of selection of the building components in microprocessor based controllers. Microprocessor families from Microchip, Intel and Atmel; Computer interfaces design – basic terms. Parallel and serial interfaces design. USB (Universal Serial Bus) and IrDA (Infrared Data Association) interfaces; Economical interfaces design using microprocessor based controllers; LAN (Local area network) connected microcontrollers design – basic principles; PLC (Programmable logic controllers) techniques; Computer systems PSU (Power supply unit) design – types and basic principles; Design of mechanical components which are parts of computer systems; Reconfigurable logic – historical path. Contemporary programmable integrated circuits (ICs) used in the computer systems design process;

PREREQUISITES: Digital Design and Computers Systems

TEACHING METHODS: Lectures, using slides, case studies, laboratory and course work, work in teams, course work description preparation and defence.

METHOD OF ASSESSMENT: Curse work description preparation and defence.

INSTRUCTION LANGUAGE: Bulgarian/English

BIBLIOGRAPHY: 1. Атанасов А., Микропроцесорите, Знание, 2010; 2. White E., Making embedded systems, O'Reylli, 2011; 3. Vahid F., Digital design, with RTL design, VHDL and Verilog, second edition, John Wiley & Sons, 2011; 4. Chattopadhyay S., Embedded system design, PHI Learning Private Limited, 2010; 5. Vahid F. and Givargis T., Embedded System Design: A Unified Hardware/Software Introduction, John Wiley & Sons, 2011; 6.www.microchip.com; 7.http://www.freescale.com; 8.http://www.atmel.com; 9.http://www.maximintegrated.com

DESCRIPTION OF THE COURSE

Name of the course: **Discrete Structures**	Code: **BpCS12.2**	Semester: **5**
Type of teaching: Lectures (L) Laboratory work (LW)	Hours per semester: L – 30 hours LW – 15 hours	Number of credits: **4**

LECTURER(S):
Prof. PhD Veselka Boeva (FEA), tel.: 659 723, email: vboeva@tu-plovdiv.bg, Technical University of Sofia, branch Plovdiv

COURSE STATUS IN THE CURRICULUM: Compulsory elective from the curriculum for training of students to obtain Bachelor's degree, specialty Computer systems and technologies, Professional orientation 5.13 Communications and Computer Engineering, Field 5 Technical Sciences.

AIMS AND OBJECTIVES OF THE COURSE: The aim of the discipline is familiarizing the students with the basic concepts of discrete mathematics. The topics are related to the acquisition of knowledge and practical skills for application of discrete structures in the construction of algorithms and solving of tasks in the field of computer sciences.

DESCRIPTION OF THE COURSE: Main topics: Sets – main notions and operations. List and n-tuples. Cartesion product. Proof techniques – mathematical induction, proofs by contradiction, direct proofs. Combinatorics – permutations, combinations, variations. Relations and functions. Propositional and predicate logic. Graphs – main notions, representations, searching strategies. Trees – main notions. Minimal spanning tree. Boolean algebras and combinatorial circuits. Boolean functions. Automata, grammars and languages.

PREREQUISITES: Mathematics I, II, and III, Introduction to Programming, Fundamentals of Programming Languages, Platform Independent Programming Languages, Synthesis and Analysis of Algorithms

TEACHING METHODS: Lectures, information visualization by a laptop and a multimedia projector, demo-programs and problem solving of particular tasks.

METHOD OF ASSESSMENT: Two assessments at mid and end of semester (80%), laboratories (20%).

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY:
1. V. Koltun, Discrete Structures, Computer Science Department, Stanford University,Winter 2008; 2. H. Fell and J.A. Aslam, Discrete Structures, College of Computer and Information Science, Northeastern University, Boston, Massachusetts, 2009; 3. Кр. Манев, Увод в дискретната математика, Четвърто издание, КЛМН, София, 2006; 4. R. Johnsonbaugh, Discrete Mathematics, Prentice Hall Int., Saddle River, New Jersey, Fourth Edition, 1997; 5. Й. Денев, Р. Павлов, Я. Деметрович, Дискретна математика, Наука и изкуство, София, 1984; 6. Б. Болобаш, Теория на графите, Наука и изкуство, София, 1989; 7. Center for Discrete Mathematics & Theorethical Computer Science: http://dimacs.rutgers.edu/

DESCRIPTION OF THE COURSE

Name of the course: **Robotics**	Code: **BpCST13.1**	Semester: **6**
Type of teaching: Lectures (L) Laboratory work (LW))	Hours per semester: L – 30 hours LW – 15 hours	Number of credits: **4**

LECTURER(S):

Assoc. Prof. Eng. Nikola Shakev, PhD (FEA), tel.: 032/659 528, e-mail: shakev@tu-plovdiv.bg

Technical University of Sofia

COURSE STATUS IN THE CURRICULUM: Elective subject from the curriculum for training of students to obtain Bachelor's degree, specialty Computer Systems and Technologies, Professional orientation 5.3. Communication and computer technologies, Field 5 Technical Sciences.

AIMS AND OBJECTIVES OF THE COURSE: At the end of the course the students are expected to know the basic parameters and characteristics of industrial and mobile robots. They must be able to create programs for controlling the movements of an industrial robot, programing the input / output signals and robot interaction with other devices.

DESCRIPTION OF THE COURSE: The main topics concern: Mathematical formalization of the description of the robot's position; Kinematic models; Human-machine interface in industrial robots; RToolbox programming environment; Basic parameters and initializations for creating a project; Program commands for robot movement; Commands for working with digital inputs and outputs; Optimization of robot movements; Work in multitasking mode; Working with a computer vision system.

PREREQUISITES: Programming, Mathematics.

TEACHING METHODS: Lectures, using slides, case studies and laboratory, work in teams,.

METHOD OF ASSESSMENT: Two assessments at mid and end of semester (70%), laboratories (30%),

INSTRUCTION LANGUAGE: Bulgarian/English

BIBLIOGRAPHY: 1. Craig, John J. Introduction to robotics : mechanics and control. 3rd ed. Upper Saddle Hall: Pearson Educacion Internacional, 2005. ISBN 0201543613 ; 2. RT ToolBox3 User's Manual, Mitsubishi Electric Industrial Robots, https://mitsubishielectric.com; 3. R. Siegwart, I. Nourbakhsh. Introduction to Autonomous Mobile Robots. Massachusetts Institute of Technology, 2004.

DESCRIPTION OF THE COURSE

Name of the course: **Digital Signal Processing**	Code: **BpCST13.2**	Semester: **6**
Type of teaching: Lectures (L) Laboratory work (LW)	Hours per semester: L – 30 hours LW – 15 hours	Number of credits: **4**

LECTURER(S):
Assoc. Prof. Eng. Boyko Petrov, PhD (FEA), tel.: 659 960, e-mail: bpetrov@tu-plovdiv.bg
Technical University of Sofia, Branch Plovdiv

COURSE STATUS IN THE CURRICULUM: Elective subject from the curriculum for training of students to obtain Bachelor's degree, specialty Computer Systems and Techniques, Professional orientation 5.3 Communications and Computer Engineering, Field 5 Technical Sciences.

AIMS AND OBJECTIVES OF THE COURSE: After completing the course, students must know the classical methods of digital filtering, spectral and correlation analysis, architectures of specialized microprocessors for digital signal processing, as well as basic methods for compression and decompression of sound and moving pictures.

DESCRIPTION OF THE COURSE: Main topics: Types of signals and Z-transformation, Methods for designing of digital filters based on an analog prototype, Principle of estimation and use of one-dimensional discrete Fourier transform - Cooley-Tukey algorithm, Correlation and Scanning analysis, Two-dimensional filtration, Two-dimensional cochineal conversion, Method for compression of still images - JPEG, Methods for compression of moving pictures MPEG-1, 2 and 4, Features of the architecture of specialized processors for digital signal processing - DSP, features and modes of operation of interfaces for input and output of sound and image in a specialized digital processing system.

PREREQUISITES: Signals and Systems, Programming, Fundamentals of Network Technology, Microprocessor Systems

TEACHING METHODS: Lectures, using slides, case studies, laboratory work, code design, work in teams, protocols preparation and defence.

METHOD OF ASSESSMENT: Two one-hour assessments at mid (30%) and end (40%) of semester, laboratories (30%).

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY: Lyons R.G., "Uderstanding of digital signal processing", Prentice Hall PTR Publication, NJ 07458, ISBN 0-201-63467-8; Crane R. , "A Simplified Approach To Image Processing-Classical And Modern Techniques in C", Prentice Hall PTR Publication, NJ 07458, ISBN 0-13-226416-1; ®ADSP-214xx SHARC Processor Hardware Reference, Revision 1.1, April 2013, Part Number 82-000469-01, Analog Devices, Inc. One Technology Way Norwood, Mass. 02062-9106; ®ADSP-BF51x Blackfin Processor Hardware Reference Revision 1.2, February 2013 Part Number 82-100109-01 Analog Devices, Inc. One Technology Way Norwood, Mass. 02062-9106

DESCRIPTION OF THE COURSE

Name of the course: **Project (by choice from subjects № 35, 38, 39)**	Code: **BpCST14**	Semester: **6**
Type of teaching: Course project	Hours per semester: L – 0 hours S – 0 hours LW – 0 hours	Number of credits: **2**

LECTURER(S):
Assoc. Prof. Eng. Nikolay Kakanakov, PhD (FEET), tel.: 659 765, e-mail: kakanak@tu-plovdiv.bg
Technical University of Sofia Plovdiv branch

COURSE STATUS IN THE CURRICULUM: Compulsory subject from the curriculum for training of students to obtain Bachelor's degree, specialty Computer systems and technologies, Professional orientation 5.3 Communications and computer engineering, Field 5 Technical Sciences.

AIMS AND OBJECTIVES OF THE COURSE: Development of the skill of the students to use the knowledge from the studied ICT subjects.

DESCRIPTION OF THE COURSE: Practical implementation of a project in a subject from the current semester (by choice from № 35, 38, 39).

PREREQUISITES: The selected subject must be elected if its elective.

TEACHING METHODS: Independent practical task implementation with documentation/description and defense.

METHOD OF ASSESSMENT: Course project.

INSTRUCTION LANGUAGE: Bulgarian

DESCRIPTION OF THE COURSE

Name of the course: **Sports**	Code: **FaSPR06**	Semester: 6
Type of teaching: Lectures (L) Laboratory work (LW)/Seminars (S) Self-Study (SS)	Hours per semester: L – 0 hours S – 0 hours SS – 30 hours	Number of credits: 1

LECTURER(S):
Sen. Lect. Daniel Vladimdirov, PhD (FEA), tel.: 032 659 646, e-mail: danielv@tu-plovdiv.bg
Sen.Lect. Petar Doganov, PhD (FEA), tel.: 032 659 648, e-mail: pdoganov@tu-plovdiv.bg
Sen.Lect. Boris Spasov, PhD (FEA), tel.: 032 659 647, e-mail: boris_spassov@tu-plovdiv.bg
Technical University of Sofia

COURSE STATUS IN THE CURRICULUM: Facultative subject from the curriculum for training of students to obtain Bachelor's degree, specialties "Computer Systems and Technologies", 5.3 Computer and communication technique, Field 5 Technical Sciences.

AIMS AND OBJECTIVES OF THE COURSE: Targeted at further developing of students' physical activities, skills and hygiene habits through effective methods of physical education, improving their mental and physical performance.

DESCRIPTION OF THE COURSE: The knowledge and skills in Physical Education and Sports develop a wide range of motor skills and habits, help the hardening of the body and contribute to the moral development of students. The enhancement of physical skills is carried out through:

1. General Physical Preparedness (GPP) – in these seminars the students develop a wide range of motor skill and habits; work to improve strength, speed, endurance, flexibility, structure and skill; increase resistance to unfavourable environmental factors; develop their physical qualities and experience.

2. Sports-Specific Physical Preparedness (SPP) – students improve their sport skills and habits in a specific sport and gain experience through participation in competitions; work to improve strength, speed, endurance, flexibility, structure and skill; increase resistance to unfavourable environmental factors; develop their physical qualities and experience.

PREREQUISITES: The curriculum presumes the minimum of knowledge and skills acquired at secondary school.

TEACHING METHODS: Seminars in accordance with the curriculum in PE and Sport.

METHOD OF ASSESSMENT: Evaluation is based on functional tests at the end of semester. Lecturer's signature is required at the end of semester.

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY: 1. Владимиров В. Туризъм и ориентиране. Методическо ръководство за студентите от ТУ София, филиал Пловдив. Издателство на ТУ - София. 2010.

DESCRIPTION OF THE COURSE

Course Title: **English for professional communication**	Code: **FaBpCST03.1**	Semester: **6**
Type of teaching: Lectures (L) Laboratory work (LW)	Hours per semester: L – 15 hours LW – 30 hours	Number of credits: **3**

LECTURERS:	**Telephone:**	**E-mail:**
Sen. Lect. Konstantina Nyagolova (FME, English)	0887276513	konstantinanik@yahoo.com
Sen. Lect. Nadya Popova (FME, English)	659 707	popovanadia@yahoo.com
Sen. Lect. Anet Arabadjieva (FME, English)	0892231353	anet2003@abv.bg
Sen. Lect. Nadezhda Geshanova (FME, English)	0889314932	geshanova@tu-plovdiv.bg
Sen. Lect. Dr. Daniela Valeva (FME, English)	0897899039	daniela.valeva89@gmail.com

COURSE STATUS IN THE CURRICULUM: Optional elective course in the curriculum of the ***Bachelor Degree Programme in Computer Systems and Technologies***, Professional qualification 5.3 Communications and Computer Technologies, Professional field 5 Technical Sciences.

COURSE OBJECTIVES: The course is targeted at developing students' foreign language knowledge and practical skills for the purposes of their professional communication. Upon the successful completion of the course students will have acquired language competences for in-company and intercompany communication, e.g. telephoning, e-mailing for business purposes, negotiating, delivering presentations, conflict resolution, teamwork, awareness of cultural differences when working with both partners and customers.

COURSE DESCRIPTION: The course is taught at language levels determined through placement tests, based on the compulsory foreign language course taken in Year 1 at TU – Sofia. No absolute beginner groups are formed. The course focuses on the further development of the four language skills in the context of in-company and intercompany communication.

PREREQUISITES: Completed compulsory foreign language course in Year 1.

TEACHING METHODS: Lectures and lab exercises targeted at further development of foreign language skills for professional communication through individual presentations and teamwork using audio and video, as well as multimedia.

METHOD OF ASSESSMENT: Evaluation is based on continuous assessment and students get a grade at the end of the course.

LANGUAGE OF INSTRUCTION: English

LITERATURE RECOMMENDED: 1. Intelligent Business English, Pearson Longman; 2. Developing Business Contacts, Oxford University Press; 3. Negotiating, (Longman Business English Skills S.), Longman; 4. Telephoning (Longman Business English Skills S.), Longman; 5. Presenting facts and figures, (Longman Business English Skills S.), Longman

DESCRIPTION OF THE COURSE

Name of the Course: **Project Management**	Code: **FaBpCST03.2**	Semester: 6
Type of teaching: Lectures (L) Laboratory work (LW)	Hours per semester: L - 15 hours, LW – 30 hours	Number of credits: 3

LECTURERS: Assoc. Prof. Eng. Georgi Georgiev, PhD tel. 032 659 706, email: georgi@tu-plovdiv.bg, Technical University – Sofia, Plovdiv Branch

COURSE STATUS IN THE CURRICULUM: Free elective for the full-time Computer Systems and Technologies Bachelor Degree students at the Faculty of Electronics and Automation. Professional qualification 5.3 Communications and Computer Technologies, Professional field 5 Technical Sciences.

OBJECTIVES OF THE COURSE: Upon completion students will have basic knowledge of the Project Management processes and will acquire skills for identifying project ideas and turning them into project proposals.

DESCRIPTION OF THE COURSE: The course is focused on identifying project ideas and turning them into project proposals. Main topics are: Definitions of Project management, Projects and types of projects; The project as an instrument for meeting organizational needs and attracting funding; Methods and techniques for project development; Main elements of the project cycle and the project proposal; Developing project activities and identifying necessary resources; Project budgeting; Project implementation and management; Project teambuilding.

PREREQUISITES: none.

TEACHING METHODS: Lectures with slides and topic discussions; lab work including group case study discussions and an individual assignment with a powerpoint presentation defence.

METHOD OF ASSESSMENT: Final written exam (60%) and individual assignment defence(40%).

LANGUAGE OF INSTRUCTION: English

LITERATURE RECOMMENDED:

1. Watts, A. Project Management. Victoria, B.C.: BCcampus., 2014. 2. A Guide to the Project Management Body of Knowledge (PMBOK Guide), Sixth Edition 2017; 3. Stephen Barker and Rob Cole, Brilliant Project Management: What the best project managers know, do, and say; Pearson 2014 ; 4. Joseph Heagney, Fundamentals of Project Management, Fourth Edition; 2012 American Management Association; 5. Kemp, Sid "Project management- made easy" 2006. 6. Сборник материали на Програма „Партньори за проекти" на Център по предприемачество към Технически университет – София, филиал Пловдив, 2005 ; 7. Иванов, Вл. „Ръководство за подготвяне на бизнес план" на Център по предприемачество към Технически университет – София, филиал Пловдив, 2010; 8. Георгиев Г., Танева П. „Наръчник за подготовка на проекти", София, ФРМС, 2004