

## DESCRIPTION OF THE COURSE

Name of the course: <b>Mathematics III</b>	Code: <b>MAT31</b>	Semester: III
Type of teaching: Lectures (L) Seminars (S)	Hours per semester: L – 30 hours S – 30 hours	Number of credits: <b>6</b>

### **LECTURER(S):**

Assoc. Prof. Albena Pavlova, PhD (FME) tel: 032 659 652, e-mail: [albena\\_pavlova@tu-plovdiv.bg](mailto:albena_pavlova@tu-plovdiv.bg)

Chief Assist. Prof. Radka Koleva, PhD (FME), tel.: 032 659 651, e-mail: [rkoleva@tu-plovdiv.bg](mailto:rkoleva@tu-plovdiv.bg)

Chief Assist. Prof. Iva Naidenova, PhD (FME), tel.: 032 659 651, e-mail: [iva.naydenova@tu-plovdiv.bg](mailto:iva.naydenova@tu-plovdiv.bg)

Technical University of Sofia

**COURSE STATUS IN THE CURRICULUM:** Compulsory subject from the curricula 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:** Familiarization the students with basic parts of the mathematical analysis and neighbour mathematical disciplines necessary for application disciplines.

**DESCRIPTION OF THE COURSE:** Main topics: Series, function series and Fourier series. Some notions and basic theorems from the field theory – stream, divergence, circulation, rotation of the vector field, Theorems of Green, Gauss and Stokes. Theorem for the independence of the integral from the path; Function of one complex variable – limit of function, continuity, derivative of function of one complex variable, analytic function. Cauchy-Riemann conditions (equations), conformal mapping. Integration in the complex domain – linear integral, Cauchy integral theorem, Cauchy integral formula and formula for derivatives. Power series expansion of general analytic function (Taylor series). Classification of the isolated singularities and definition of Laurent series and residues. Theorem for the residues. Application of residues to evaluation of real integrals; Foundations of the operational calculus – Laplace transform – basic properties and theorems. Applications – solving some classes differential and integral equations..

**PREREQUISITES:** Very good training in Mathematics I (MAT13) and Mathematics II (MAT22).

**TEACHING METHODS:** Lectures and Seminars.

**METHOD OF ASSESSMENT:** Written examination.

**INSTRUCTION LANGUAGE:** Bulgarian

### **BIBLIOGRAPHY:**

1. Колектив на ИПМИ, Висша математика, части III и IV, Техника, 1986.
2. Колектив на ИПМИ, Избрани глави от математиката, Модули I – V, ТУ–София, 1993.
3. Колектив на ИПМИ, Сборник от задачи по висша математика, IV част, 1979.
4. Маринов М.С. Аналитични функции. Редове на Фурие. Интегрални трансформации, 5. ТУ–София, 1996.

## DESCRIPTION OF THE COURSE

Name of the course: <b>Semiconductor devices</b>	Code: <b>EEA25</b>	Semester: <b>3</b>
Type of teaching: Lectures (L) Laboratory work (LW)	Hours per semester: L – 30 hours LW – 30 hours	Number of credits: <b>6</b>

### **LECTURER(S):**

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**COURSE STATUS IN THE CURRICULUM:** Compulsory from the curriculum of students to obtain Bachelor's degree, specialty Computer Systems and Technologies, Professional orientation 5.3 Communications and computer equipment, Field 5 Technical Sciences.

**AIMS AND OBJECTIVES OF THE COURSE:** At the end of the course the students should know the structure and principle of operation of the basic semiconductor devices to know their characteristics, mode of operation and influence of temperature on their parameters, to be able to choose appropriate device for given application and to calculate important parameters, to use them in solving of engineering problems.

**DESCRIPTION OF THE COURSE:** Introduction to Semiconductors, PN Junction. Semiconductor Diodes. Bipolar Junction Transistors. FET Transistors. IGBTs. Thyristor. Optoelectronic Devices.

**PREREQUISITES:** Physics. Materials. Electrical Engineering.

**TEACHING METHODS:** Lectures, using slides and multimedia learning materials with animations illustrating mode of operation, characteristics and parameters and their changes caused by temperature and movement of operating point. Laboratory exercises cover part of preparation and design and practical work.

**METHOD OF ASSESSMENT:** Two one-hour assessments at mid and end of semester (70%), laboratories (30%).

**INSTRUCTION LANGUAGE:** Bulgarian

**BIBLIOGRAPHY:** 1. Христов, М., Т. Василева и Е. Манолов, Полупроводникови елементи, Нови знания, 2007; 2. Дандаров, А. Оптиелектрони прибори и интегрални схеми, ТУ-София, 1991; 3. Вълков, С., Ямаков И., Дойчинова. Електронни и полупроводникови елементи и интегрални схеми, Техника, 2000; 4. Ямаков И., Дойчинова Р, Христов М. Електронни и полупроводникови прибори и интегрални схеми, С, Техника, 1987; 5. Thomas L. Floyd, Electronic devices, 1988.

## DESCRIPTION OF THE COURSE

Name of the course: <b>Platform Independent Programming Languages</b>	Code: <b>CCE03</b>	Semester: <b>3</b>
Type of teaching: Lectures (L) Seminars (S) Laboratory work (LW)	Hours per semester: L – 30 hours S - 15 hours LW – 30 hours	Number of credits: <b>7</b>

### **LECTURER(S):**

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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 and Software Engineering, Professional orientation 5.3 Communication and Computer Engineering, Field 5 Technical Sciences.

**AIMS AND OBJECTIVES OF THE COURSE:** The aim of the course is for students to learn and be able to apply the approaches, methods and technical means and the basic principles of the object-oriented approach in programming.

**DESCRIPTION OF THE COURSE:** The knowledge and skills in Platform-independent programming languages create prerequisites for program solving of practical tasks and multifaceted realization of the students in the field of information technologies. At the end of their studies the student will have skills to use object-oriented programming; knows the basics of object-oriented programming languages; knows and uses the basic packages and classes of object-oriented programming languages; can create own classes; can develop programs; has knowledge of the technology for interception and handling of exceptions and errors in his program; is able to create, maintain and process binary and text files; knows the principles of working with collections for data storage and processing.

**PREREQUISITES:** Introduction to programming, Basic programming languages.

**TEACHING METHODS:** Lectures, using slides, case studies, seminars and laboratory work with protocols.

**METHOD OF ASSESSMENT:** Written exam with a duration of 2 school hours, with 3 tasks to solve them in program code in C++ (72%), seminars and laboratories (28%).

**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](http://docs.embarcadero.com/products/rad_studio)

## DESCRIPTION OF THE COURSE

Name of the course: <b>Synthesis and Analysis of Algorithms</b>	Code: <b>CCE04</b>	Semester: <b>3</b>
Type of teaching: Lectures (L) Laboratory work (LW) Course work (CW)	Hours per semester: L – 30 hours LW –30 hours	Number of credits: 6

### **LECTURER(S):**

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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 Communication and Computer Engineering, Field 5 Technical Sciences.

**AIMS AND OBJECTIVES OF THE COURSE:** To provide knowledge about algorithm design and analysis, to develop skills in programming and application of the basic algorithms.

**DESCRIPTION OF THE COURSE:** The main topics concern: Algorithm – main notations. Classification of algorithms. Elementary data structures: array, linked list, stack and queue algorithms. Analysis of algorithms. Methods for algorithm design: recursion, divide-and-conquer, dynamic programming. Elementary and advanced sorting algorithms. Trees – main notations, generic and binary trees, tree traversals. Searching algorithms, binary search trees. Balanced binary trees. Hash tables. Graphs – main notations, representations. Depth-first search (DFS) and Breadth-first search (BFS) algorithms. Minimum spanning tree algorithms.

**PREREQUISITES:** Good fundamental knowledge in Mathematics I and II, Introduction to Programming, Basic Programming Languages.

**TEACHING METHODS:** Lectures, using multimedia presentations, laboratory work on main topics with individual and group tasks, course work preparation and defence.

**METHOD OF ASSESSMENT:** Written test, including theory questions and solving of particular problems. The overall grade is an aggregation of the test grade (75%) and the course work defence grade (25%).

**INSTRUCTION LANGUAGE:** Bulgarian

**BIBLIOGRAPHY:** 1. В. Боева, Д. Петрова, Ръководство за лабораторни упражнения: Алгоритми и структури от данни, Издателство на Технически Университет – София, 2016, ISBN:978-6191670154; 2. R. Sedgewick, K. Wayne, Algorithms, 4<sup>th</sup> Edition, Pearson Education, Inc. 2011, ISBN:978-0321573513; 3. T. Cormen, C. Leiserson, R. Rivest, C. Stein, Introduction to Algorithms, 3<sup>rd</sup> Edition, The MIT Press, 2009, ISBN:978-0262033848 ; 4. Ст. Стойчев, Синтез и анализ на алгоритми, Издателство "БПС", 2007, ; 5. Пр. Наков, П. Добриков, Програмиране = ++ Алгоритми, TopTeam Co., София, 2005 ISBN:954-890506-X

## DESCRIPTION OF THE COURSE

Name of the course: <b>Sports</b>	Code: <b>SPR03</b>	Semester: 3
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):**

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Technical University of Sofia-Branch Plovdiv

Technical University of Sofia

**COURSE STATUS IN THE CURRICULUM:** Compulsory 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 and “Pass grade”.

**INSTRUCTION LANGUAGE:** Bulgarian

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

## DESCRIPTION OF THE COURSE

Name of the course: <b>Computer systems</b>	Code: <b>CCE05</b>	Semester: <b>4</b>
Type of teaching: Lectures (L) Laboratory work (LW)	Hours per semester: L – 30 hours S – LW – 30 hours	Number of credits: <b>5</b>

### **LECTURER(S):**

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Assist. Prof. Eng. Spiridon Arnaudov, PhD (FEA), tel.: e-mail: [donela@gmail.com](mailto:donela@gmail.com)  
TU Sofia, Plovdiv Branch

**COURSE STATUS IN THE CURRICULUM:** Compulsory curricula for training of students to obtain Bachelor's degree, specialty Computer systems and technologies, Professional orientation 5.3 Communication and Computer Technics, Field 5 Technical Sciences.

**AIMS AND OBJECTIVES OF THE COURSE:** The purpose of the course is to provide students with knowledge of the structure, organization and architecture of a computer system and its data processing as a process.

**DESCRIPTION OF THE COURSE:** Structure, organization and architecture of a computer system. Von Neumann Architecture. Computer Classification. Technical and Economical Characteristics of Computers. Mathematical, Logical and engineering bases of computer organization. Computer processing, description system – PMS. Program control. Data set and command set . Computer operation structures. Binary Adders. Computer control structures Automats. Computer memory. Computer processors. Central Control Unit. Arithmetical Logical Unit. CISC and RISC. Scalar and Pipelined Processors with Prinstans and Harwards architecture. Input-output of data in computers.

**PREREQUISITES:** Introduction in Programing, Basic programming languages, Electrical Engineering, Semiconductor elements, Synthesis and Analysis of Algorithms

**TEACHING METHODS:** Lectures, using slides, case studies, laboratory work, protocols defence.

**METHOD OF ASSESSMENT:** Written exam with test on the theory and written work on problems. The final grade is constructed on the exam results (totally 80%) and the protocols from the laboratory work (20%).

**INSTRUCTION LANGUAGE:** Bulgarian/English

**BIBLIOGRAPHY:** 1. William Stallings, “Computer Organization and Architecture.”, 10th Edition. Pearson, 2016, ISBN: 978-0-13-4102139, 2. Andrew S. Tanenbaum and Todd Austin, “ Structured Computer Organization” 6th Edition, Pearson Education, 2012, ISBN: 978-0132916523, 3.David A. Patterson, John L. Hennessy, “Computer Organization and Design“, Elsevier, 2012, ISBN: 978-0-12-374750-1.

## DESCRIPTION OF THE COURSE

Name of the course: <b>Signals and Systems</b>	Code: <b>CCE06</b>	Semester: <b>4</b>
Type of teaching: Lectures (L) Laboratory work (LW)/Seminars (S) Course work (CW)	Hours per semester: L – 30 hours S – 30 hours LW – 30 hours	Number of credits: <b>5</b>

### **LECTURER(S):**

Assist. Prof. Eng., Iliya Petrov, PhD (FEA), tel.: 32 659 718, e-mail: [ilpetrov@tu-plovdiv.bg](mailto:ilpetrov@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 Equipment, Field 5. Technical Sciences.

**AIMS AND OBJECTIVES OF THE COURSE:** At the end of the course the students are expected to be able to apply the methods for analysis, synthesis and signal processing and investigation of systems in time, frequency and Laplace domains; to know principles of basic types of modulations and its applications in telecommunications, to have basic knowledge of information theory.

**DESCRIPTION OF THE COURSE:** The main topics concern: Spaces of signals; Bases; Fundamental input signals; Description of signals in time domain: adding approach and approach with time windows; Fundamentals of spectrum analysis: Forms of Fourier Series, Properties of Fourier transform and complex amplitudes for rational solving problems about spectrum analysis; LTI continuous and discrete systems; Laplace transform and its applications for analyzing circuits; System functions; Pole-zero diagram; Analogue and digital methods for radio signal creation; Spectra of AM, FM and PAM signals; Applications of modulations. Formatting analogue signals: sampling, quantization, coding of quantized signals; Using MATLAB for spectrum analysis; z-transform; Basics of information theory: information quantity, entropy; Coding source theorem and algorithms for optimal coding.

**PREREQUISITES:** Mathematics I, Mathematics II, Mathematics III, Physics, Electrical Engineering.

**TEACHING METHODS:** Lectures with multimedia projector. Solving practical problems on seminars. Laboratory work with protocols and course work description preparation and defence.

**METHOD OF ASSESSMENT:** Exam (50%), laboratories (20%), course work (30%).

**INSTRUCTION LANGUAGE:** Bulgarian

**BIBLIOGRAPHY:** 1. Ненов Г., Сигнали и системи, Нови знания, София, 2008, ISBN 978-954-9315-87-5; 2. Опенхайм А., А. Уилски, Я. Ъънг, Сигнали и системи, София, Техника, 1993, ISBN 954-03-0147-5; 3. Стефанова К., Б. Коен, И. Петров, Ръководство за лабораторни упражнения по сигнали и системи, Изд. на ТУ-София, София, 2008, ISBN 978-954-438-732-7.

## DESCRIPTION OF THE COURSE

Name of the course: <b>Fundamentals of Computer and Communication Networks</b>	Code: <b>CCE07</b>	Semester: <b>4</b>
Type of teaching: Lectures (L) Laboratory work (LW) Course work (CW)	Hours per semester: L – 30 hours S – LW – 30 hours	Number of credits: <b>5</b>

### **LECTURER(S):**

Prof. Eng. Grisha Spasov, PhD (FEA), tel.: 032 659724, e-mail: [gvs@tu-plovdiv.bg](mailto:gvs@tu-plovdiv.bg)

Assoc. Prof. Nikolay Kakanakov, PhD(FEA), tel.: 032 659725, e-mail: [kakanak@tu-plovdiv.bg](mailto:kakanak@tu-plovdiv.bg)

Assoc.Prof. Mitko Shopov PhD(FEA), tel.: 032 659765, e-mail: [mshopov@tu-plovdiv.bg](mailto:mshopov@tu-plovdiv.bg)  
TU Sofia, Plovdiv Branch

**COURSE STATUS IN THE CURRICULUM:** Compulsory curricula for training of students to obtain Bachelor's degree, specialty Computer systems and technologies, Professional orientation 5.3 Communication and Computer Technics, Field 5 Technical Sciences.

**AIMS AND OBJECTIVES OF THE COURSE:** The purpose of the course is to provide students with knowledge for Open Systems' Architecture – ISO OSI model, Data Communication Networks, Global network – Internet and TCP/IP client-server applications.

**DESCRIPTION OF THE COURSE:** Open Systems' Architectures – ISO OSI model. Structure and functions of OSI layers. Communication media. Methods of data transfer. Hardware aspects of data transfer – standard interfaces. Communication protocols. Data transfer control. Data link layer. LAN – topology. Media access control. Network layer. Internet Protocols. Transport Layer. TCP and UDP protocols, Sockets. Internet applications. DNS, FTP, SMTP, HTTP. Network operation systems. Client-server architecture – applications. Network administration.

**PREREQUISITES:** Introduction in Programming, Basic programming languages, Electrical Engineering, Semiconductor elements, Synthesis and Analysis of Algorithms

**TEACHING METHODS:** Lectures, using slides, case studies, laboratory work, protocols defence.

**METHOD OF ASSESSMENT:** Written exam with test on the theory and written work on problems. The final grade is constructed on the exam results (totally 60%), Course work (20%) and the protocols from the laboratory work (20%).

**INSTRUCTION LANGUAGE:** Bulgarian/English

**BIBLIOGRAPHY:** 1. Grisha Spasov, Nikolay Kakanakov, Mitko Shopov, "Guide for laboratory work in Computer Networks", TU Sofia, 2011, ISBN: 978-964-438-790-7. 2. James F. Kurose, Keith W. Ross, "Computer Networking. A Top-Down Approach", 7th edition, Pearson, 2017, ISBN-13: 978-0-13-359414-0. 3. Andrew S. Tanenbaum, David J. Wetherall, "Computer Networks", 5th Edition, Prentice Hall, 2010, ISBN-10: 0132126958. 4. William Stallings, "Data and Computer Communications", 10th Edition, Prentice Hall, 2013, ISBN-10: 0133506487.



## DESCRIPTION OF THE COURSE

Name of the course: <b>Databases</b>	Code: <b>CCE08</b>	Semester: <b>4</b>
Type of teaching: Lectures (L) Laboratory work (LW)	Hours per semester: L – 30 hours LW – 30 hours	Number of credits: <b>6</b>

### **LECTURER(S):**

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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:** At the end of the course the students are expected to know the basic concepts of building and exploitation of the modern database systems for structured data as well, as to be able to perform as qualified users of data in relational databases through SQL language interface.

**DESCRIPTION OF THE COURSE:** The main topics concern: Database systems – nature and concepts; Entity-Relationship data model; Relational data model; SQL – ideas and concepts; Data retrieval queries; Data manipulation queries; Data definition language; Indexes; Transactions.

**PREREQUISITES:** No.

**TEACHING METHODS:** Lectures with traditional and electronic tools for teaching; laboratory exercises with reports. All teaching forms are adapted for attended and distant teaching.

**METHOD OF ASSESSMENT:** This course includes ongoing assessment during the semester. The overall grade is an aggregation of the test (70%) and the lab-works grades (30%).

**INSTRUCTION LANGUAGE:** Bulgarian

**BIBLIOGRAPHY:** 1. Elmasri R., Sh. Navathe. Fundamentals of Database Systems, 7<sup>th</sup> ed., 2015, ISBN 978-0-1339-7077-7; 2. Kline K., D. Kline. SQL in A Nutshell, 3<sup>rd</sup> ed., 2009, ISBN 978-0-5965-1884-4..

## DESCRIPTION OF THE COURSE

Name of the course: <b>Measurement in Communication and Computer engineering</b>	Code: <b>EEA26</b>	Semester: <b>4</b>
Type of teaching: Lectures (L) Laboratory work (LW)	Hours per semester: L – 30 hours LW – 15 hours	Number of credits: <b>4</b>

### **LECTURER:**

Assist. Prof. Eng. Rossen Bozhilov, PhD (FEA), e-mail: rossen\_chi@tu-plovdiv.bg  
Technical University of Sofia

**COURSE STATUS IN THE CURRICULUM:** Compulsory curricula for training of students to obtain Bachelor's degree, speciality Computer systems and technology, professional orientation 5.3 Communication and Computer Engineering, Field 5 Technical Sciences.

**AIMS AND OBJECTIVES OF THE COURSE:** Students to acquire fundamental theoretical knowledge of the principles of operation and practical skills to work with basic measuring instruments and systems in the field of information and communication technologies.

**DESCRIPTION OF THE COURSE:** Standards, errors and inaccuracies, system configuration, measurement of analog and digital quantities, static characteristics, dynamic characteristics, current and voltage measurement, compensating techniques, analog and digital oscilloscopes, basic sensors, computer-based measuring systems and virtual equipment. Methods and means for measuring communication signals. Parameters and characteristics of measurement hardware.

**PREREQUISITES:** Electrical Engineering, Semiconductor Devices, Signals and Systems.

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

**METHOD OF ASSESSMENT:** Two one-hour assessments at mid and end of semester (70%), laboratories (30%).

**INSTRUCTION LANGUAGE:** Bulgarian

**BIBLIOGRAPHY:** 1. Стоянов, Ив., Електронни измервателни системи, Технически университет – София, София 2012г.; 2 Арнаудов Р., Р. Динов. Измервания в комуникациите. ТУ - София, 2005 г.; 3. John Wiley & Sons, Fundamentals of Instrumentation and Measurement, Dominique Placko 2010 4. Alan S. Morris, Reza Langari, Measurement and Instrumentation: Theory and Application, ELSEVIER 2012.

## DESCRIPTION OF THE COURSE

Name of the course: <b>Databases – course project</b>	Code: <b>CCE09</b>	Semester: <b>4</b>
Type of teaching: Course project (CP)	Hours per semester: Standalone work – 60 hours	Number of credits: <b>2</b>

### **LECTURER(S):**

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Technical University of Sofia

**COURSE STATUS IN THE CURRICULUM:** Compulsory position in 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:** At the end of the project course the students are expected to be able to design and implement a relational database according to a given assignment.

**DESCRIPTION OF THE COURSE:** The main topics concern: Elements of system analysis; ER model design; ER model to table set transformation; Relational model design; Data operations identification; Atomic manipulations design; Retrieval queries design; Implementation and testing.

**PREREQUISITES:** No.

**TEACHING METHODS:** Assignment and standalone work with consultations

**METHOD OF ASSESSMENT:** Attended defence.

**INSTRUCTION LANGUAGE:** Bulgarian

**BIBLIOGRAPHY:** 1. Elmasri R., Sh. Navathe. Fundamentals of Database Systems, 7<sup>th</sup> ed., 2015, ISBN 978-0-1339-7077-7; 2. Kline K., D. Kline. SQL in A Nutshell, 3<sup>rd</sup> ed., 2009, ISBN 978-0-5965-1884-4..

## DESCRIPTION OF THE COURSE

Name of the course: <b>Practicum</b>	Code: <b>PRC02</b>	Semester: <b>4</b>
Type of teaching: Lectures (L) Laboratory work (LW)/Seminars (S) Course work (CW)	Hours per semester: L – 0 hours S – 0 hours LW – 0 hours	Number of credits: <b>2</b>

### **LECTURER(S):**

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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:** Students must acquire practical knowledge and skills for working in companies with a subject of activity in the field of ICT. Specific knowledge and practical skills for design, production, implementation, maintenance and operation of modern computer and communication systems in real ICT companies with a specific focus depending on the specifics of the companies.

**DESCRIPTION OF THE COURSE:** The main topics concern: programming in different programming languages. Working with version control systems. Code sharing systems and teamwork. Task planning. Preparation of documentation and comments in a project. Open source licenses - types and advantages of use.

**PREREQUISITES:** Introduction to Programming, Fundamentals of Programming Languages

**TEACHING METHODS:** Practical work in ICT companies.

**METHOD OF ASSESSMENT:** Accept/reject

**INSTRUCTION LANGUAGE:** Bulgarian

## DESCRIPTION OF THE COURSE

Name of the course: <b>Sports</b>	Code: <b>SPR04</b>	Semester: 4
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):**

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Technical University of Sofia-Branch Plovdiv

Technical University of Sofia

**COURSE STATUS IN THE CURRICULUM:** Compulsory 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 and “Pass grade”.

**INSTRUCTION LANGUAGE:** Bulgarian

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