

ХАРАКТЕРИСТИКА НА УЧЕБНАТА ДИСЦИПЛИНА

Наименование на учебната дисциплина: Висша Математика - III	Код: FBE19	Семестър: 3
Вид на обучението: Лекции, семинарни упражнения.	Часове за седмица: Л – 2 часа; СУ – 2 часа.	Брой кредити: 6

ЛЕКТОР: гл. ас. д-р Албена Павлова, катедра “МФХ”, тел. 659679,

Технически университет-София, филиал Пловдив

СТАТУТ НА ДИСЦИПЛИНАТА В УЧЕБНИЯ ПЛАН: Задължителна за редовни студенти на специалности “Електроника” и „КСТ” на ФЕА на ТУ-София Филиал Пловдив за образователно-квалификационната степен “Бакалавър”.

ЦЕЛИ НА УЧЕБНАТА ДИСЦИПЛИНА: Студентите да получат знания и да изградят умения за самостоятелното им използване и за прилагането им в други дисциплини. В края на обучението по дисциплината студентът ще може:

- Да борави с основните понятия от теорията на полето;
- Да прилага апарата на аналитичните функции на една комплексна променлива;
- Да решава някои от класическите задачи на математическата физика;
- Да прилага методите на операционното смятане за определен клас задачи;
- Да прилага основните свойства на функциите на разпределение на случайни величини;
- Да използва методите на математическата статистика;

ОПИСАНИЕ НА ДИСЦИПЛИНАТА: Основни теми:

- Елементи на векторния анализ и теорията на полето – векторна форма на теоремите на Грийн, Стокс и Гаус-Остроградски. Теорема за независимост на криволинейния интеграл от пътя.

- Основи на математическия анализ на функция на една комплексна променлива – граница на функция, непрекъснатост, производна, аналитична функция на една комплексна променлива – условия на Коши-Риман, конформно изображение. Криволинейен интеграл, основна теорема на Коши, основна формула на Коши и формула за производните. Развиване на аналитична функция в ред на Тейлър и по-общо в ред на Лоран, класификация на изолираните особени точки, резидуум на функция в изолирана особена точка, теорема за резидуумите и нейните приложения.

- Основни начални и гранични задачи за ЧДУ с постоянни коефициенти – метод на Даламбер и метод на Фурие.

- Основи на операционното смятане – преобразование на Лаплас, основни свойства и теореме. Приложения за решаване на гранични задачи за ОДУ, ЧДУ, интегрални уравнения.

Запознаване с основните идеи на теорията на вероятностите и математическата статистика.

ПРЕДПОСТАВКИ: Добра подготовка по предхождащите дисциплини ВМ – I (FBE02), ВМ – II (FBE08).

МЕТОД ЗА ПРЕПОДАВАНЕ: Лекции, задължително предхождащи упражненията, семинарни упражнения (работа под ръководство на асистент), където се решават основните типове задачи.

МЕТОДИ НА ИЗПИТВАНЕ И ОЦЕНЯВАНЕ: Писмен изпит от две части – решаване на задачи и развиване на въпроси от конспекта (tu-plovdiv.bg/research_article.php?article=189).

ЕЗИК НА ПРЕПОДАВАНЕ: български

ПРЕПОРЪЧИТЕЛНА ЛИТЕРАТУРА:

1. Колектив на ИПМИ, Висша математика, части III и IV, Техника, 1986.
2. Колектив на ИПМИ, Избрани глави от математиката, Модули от I до V, Печатна база ТУ –София, 1993.
3. Колектив на ИПМИ, Сборник от задачи по висша математика, IV част, 1979.
4. www.tu-plovdiv.bg/research_article.php?article=189

ДОПЪЛНИТЕЛНА ЛИТЕРАТУРА:

1. Карапенов Хр., Теория на вероятностите и математическа статистика, ТУ –София. 1997.
2. Маринов М.С. Аналитични функции. Редове на Фурие. Интегрални трансформации, ТУ София 1996.
3. Проданова К. Въведение в статистическите методи, Сиела, 1998.
4. Мишев Д. П., Л.И. Каранджулов, Частни диференциални уравнения. Интегрални уравнения, ТУ-София, 1997.
5. Каранджулов Л. И., М. Маринов, М.Славкова, Кратък справочник по висша математика, 2007.

COURSE DESCRIPTION

Name of the course Theoretical Electrical Engineering	Code: FBE20	Semester: 3
Type of teaching: Lectures, Seminars, laboratory work	Lessons per week: L – 3 hours; LW – 1 hours; Seminars – 2 hour, Self Study – 5 hours	Number of credits: 7

LECTURER: Assoc. Prof. Dr. Nikola Georgiev, TU-Sofia, Plovdiv Branch, Faculty of Electrical Engineering and Automation; Department of Electrical Engineering; Address: 25 “Tsanko Dyustabanov” Str., Phone: (032) 659-581, e-mail: nikola.georgiev@tu-plovdiv.bg

COURSE STATUS IN THE CURRICULUM: Compulsory subject in the curriculum for the major of Computer Systems and Technologies of the Electrical Engineering and Automation Faculty, full-time and part-time students, Bachelor of science.

AIMS AND OBJECTIVES OF THE COURSE:

Theoretical Electrical Engineering – is a fundamental subject and introduces the basic laws and phenomena of electromagnetism and the approaches applied to describe the processes in linear and nonlinear electric and magnetic circuits and with the methods of analysis on these processes in constant, stationary and unfixed modes. The basic problems of the electromagnetic field are treated.

DESCRIPTION OF THE COURSE:

The subject aims at introducing students to the electromagnetic theory; the laws applied in analysis on electric and magnetic circuits, and investigation of sinusoid fixed modes, equivalent transformations; methods and theorems of analysis on linear electric circuits; resonance phenomena; linear electric circuits with inductive connections; research on periodic non-sinusoid modes in linear electric circuits; passive and active quadripolars; circuits with distributed parameters. analysis of three-phase electric circuits, the methods to analyze the transient processes in linear electric circuits and the transient processes in circuits of distributed parameters, introduction to the analysis of non-linear electric circuits and some fundamental issues of the theory of electromagnetic field.

PREREQUISITES:

The course of lectures and seminars is based on students’ knowledge of Mathematics, Physics and Programming and Computer Utilization.

TEACHING METHODS:

Lectures. Seminars when students solve problems on the laws studied at the lectures. Laboratory work carried out following a lab work guide reports worked out by the students and defended before a lecturer, thesis.

METHOD OF ASSESSMENT: Examination .

INSTRUCTION LANGUAGE – Bulgarian

BIBLIOGRAPHY: 1.Генов Л., Теоретични основи на електротехниката, София, Техника, 1991. 2. Фархи С., С. Папазов. Теоретична електротехника, ч.1, Техника, С., 1990. 3. Георгиев Н.,Теоретична електротехника, Пловдив, Макрос, 2015. 4. Георгиев Н., В. Кирчев, Ръководство за семинарни упражнения по теоретична електротехника. ТУ София, филиал Пловдив, 2012. 5. Георгиев Н., В. Кирчев, Ръководство за лабораторни упражнения по теоретична електротехника. ТУ София, филиал Пловдив, 2008 г.

DESCRIPTION OF THE COURSE

Course title: Electrical measurements	Code: FBE21	Semester: 3
Type of teaching: Lectures laboratory exercises	Hours per week: L - 2 hours; LE - 1 hours.	number of credits: 5

LECTURER: Associate Professor **Vania Iordanova Rangelova** Department "Electrical engineering", tel 0895 587 596, email: vaniarangelova@tu-plovdiv.bg , Technical University of Sofia, Branch Plovdiv

COURSE STATUS IN THE CURRICULUM: The course is mandatory for the students of specialty "Computer Systems and Technologies" on FEA TU-Sofia, Plovdiv Branch for the academic degree "Bachelor."

PURPOSE OF THE COURSE: Electrical measurements is a fundamental discipline , it aims is to teach the basic techniques and methods of measurement of electrical, magnetic and non-electrical quantities as well as issues related to metrology processing of the measurement results in the presence of systematic and random errors . Acquired knowledge and skills will be required of students in mastering the specific disciplines, in conducting laboratory classes in all disciplines, and when it is necessary to measure and evaluate a physical quantity in any area of practice.

COURSE DESCRIPTION: Students will learn how to measure current, voltage and power in single-phase and three-phase circuits , devices which are necessary to measure the true rms value of sinusoidal and non-sinusoidal currents and voltages , and how to measure parameters of electric circuits ; classify all kinds of errors that affect the result of the measurement , to use a current and voltage measuring transformer, using bridge methods for measuring circuit parameters and frequency , some electronic instrumentation , digital voltmeters , how to measure magnetic field parameters and the characteristics of ferromagnetic materials , how to use various types of oscilloscopes.

BACKGROUND: Previous knowledge in Physics, Mathematics, Theoretical Electrical Engineering, Materials Science, Semiconductor components.

TEACHING METHODS: Lectures, laboratory reports with a written report and individual protection.

METHODS OF ASSESSMENT: Written exam (open test) at the end of semester (74%), problems (16%), laboratories assignments (10%), bonuses for self-prepared answers to additional questions (15%),

LANGUAGE: Bulgarian

RECOMMENDED BOOKS

1. Garbeva Vania, Lecture notes in Electrical Measurements, Technical University of Sofia – branch Plovdiv , 2011:
2. Garbeva Vania, Task roll in Electrical Measurements, Technical University of Sofia – branch Plovdiv , 2011
3. Matrakov B, Electrical Measurements, Technical University of Sofia, 1999

ADDITIONAL Books

4. Bolton W. Electrical and Electronic measurements and testing ,Longman UK, 1992

DESCRIPTION OF THE COURSE

Name of the course Semiconductors Devices	Code: FBE22	Semester: 3
Type of teaching: Lectures and laboratory work	Lessons per week: L – 3 hours; LW – 2 hour	Number of credits: 6

LECTURER:

Assoc. Professor, Ph. D. eng. Anton Lechkov, tel.659766; E-mail:
lechkov.a@gmail.com
Technical University of Sofia - Branch Plovdiv, Department of Electronics

COURSE STATUS IN THE CURRICULUM:

Compulsory for the students from specialty KST, BEng programme of the Faculty of Electronics and Automation

AIMS AND OBJECTIVES OF THE COURSE:

At the end of the course the students are expected to have knowledge on basic semiconductors elements, 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:

The main topics concern: Introduction to Semiconductors, Standard and Special Purpose Diodes, Bipolar Junction Transistors, Thyristors, Junction Field Effect Transistors, MOS Transistors, IGBT, Optoelectronic Elements, Introduction to Integrated Circuit.

PREREQUISITES:

Courses of Physics 1, 2 part and Theoretical electrical engineering.

TEACHING METHODS:

Lectures, laboratory exercises with written statements and tests.

METHOD OF ASSESSMENT:

Examination (62 %), laboratory exercises (18%), 2 tests (20 %).

INSTRUCTION LANGUAGE – Bulgarian

BIBLIOGRAPHY: 1. Христов, М.. 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 Programming and using of computers III	Code: FBE23	Semester: 3
Type of teaching: Lectures Laboratory work	Lessons per week: Lectures – 2 hours Laboratory work – 2 hour	Number of credits: 6

LECTURER:

Assoc. Prof. Ph.D. Velko Ivanov Ilchev, Department of Computer Systems and Technologies, Technical University of Sofia, branch Plovdiv,
e-mail: iltchev@tu-plovdiv.bg, GSM: 0895-587475

COURSE STATUS IN THE CURRICULUM: Obligatory for the students specialty “Computer Systems and Technologies” B.Sc. programme of the Faculty of Electronics and Automatics, Technical University of Sofia, branch Plovdiv.

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

DESCRIPTION OF THE COURSE: Main topics: The Java platform. The Java virtual machine. Structure of a Java program. Expressions and operations. Variables in Java: declarations and initializations. Control flow statements: branches - types, characteristics and implementarions; loops - types, characteristics and implementations. Objects in Java: a class declaration, class members, methods, constructors; predefined methods; access modifiers; static variables and methods; objects - instances of a class; creation, initialization, assignment and destruction of objects; access to fields and methods; type conversion for classes. Arrays: declaration, definition, initialization; sorting and searching. Strings: declaration, conversion, comparison; the String class; creation and initialization of a string; string operations. Inheritance: derived classes; access to the components of base and derived classes; predefined variables; overridden functions; constructors calling; constructors with parameters; abstract methods and classes; interfaces. Exceptions: type, catching, processing. Graphical user interface in Java: Swing components; events and components; listeners; applications and applets. Packages and compiled units: Java API; members of packages, declaration, importing packages; storing packages. I/O streams: basic features of the java.io package. Classes and interfaces in Java to work with collections.

PREREQUISITES: PIC I and PIC II.

TEACHING METHODS: Lectures - using multimedia presentations. Laboratory work, where the students develop Java applications.

METHOD OF ASSESSMENT: Two control tests: one in middle and one at the end of semester. The first control test has a ratio of 0,4 in the final assessment and the second one - a ratio of 0,6. If a student fails on the control tests, he/she must take a written exam, which will be held during the supplementary session.

INSTRUCTION LANGUAGE: bulgarian

BIBLIOGRAPHY: 1. Thinking in Java, 4th, Bruce Eckel, Prentice Hall, 2006. 2. Java 2 – Ръководство на програмиста, Хърбърт Шилдт, София-прес, 2007. 3. The Java™ Tutorials <http://java.sun.com/docs/books/tutorial/>

COURSE DESCRIPTION

course title FOREIGN LANGUAGE	Code: FBE24	Semester: 3
Type of teaching: SEMINARS, SELF-STUDY	Contact hours per week: Seminars – 2hours, Self Study – 4 hours	Number of credits 0

LECTURERS:

Telephone:

E-mail:

Sen. Lect Penka Taneva – Kafelova (FME, English)	659 722	p.taneva@tu-plovdiv.bg :
Sen. Lect Nadya Popova (FME, English)	659 707	BonaFide@plovdiv.techno-link.com
Sen. Lect Konstantina Nyagolova (FME, English)	659 722	n.popova@tu-plovdiv.bg konstantinanik@yahoo.com

COURSE STATUS IN THE SYLLABUS: Compulsory for the students majoring in “Computer systems and technologies” and “Electronica”, at the Faculty of Electronics and Automation, Sofia Technical University, Plovdiv Branch, Bachelor’s Degree.

COURSE OBJECTIVES: Targeted at further developing of students’ knowledge and practical skills in the specific foreign language.

COURSE DESCRIPTION: The foreign language teaching is in either of two languages of equal academic status: English or German. It is carried out at the respective levels determined through placement tests, based on the principal foreign language studied at secondary school. No AB groups are formed. Apart from the general foreign language the curricula include English or German for specific purposes in accordance with students’ major subjects.

PREREQUISITES: The curricula in both languages presume the minimum of language knowledge and skills acquired at secondary school and a completed course in a foreign language in Semester 1.

TEACHING METHODS: Seminars using modern technical equipment: language lab, audio and video, as well as multimedia.

METHODS OF TESTING AND EVALUATION: Evaluation is based on continuous assessment, two tests and a course project.

LANGUAGE OF INSTRUCTION: English/German

LITERATURE RECOMMENDED:

English:

1. Headway English, OUP
2. Oxford English for Electrical and Mechanical Engineering, OUP,1997
3. English for Science and Technology – 1989
4. English for Electronics and Telecommunications, Alma Mater, 2001
5. English for Electrical Engineering, Alma Mater, 2001
6. Quick Launch into English, PUP, 1997
7. Basic Technical English, OUP, 1996
8. Collins Cobuild English Course - 1988
9. Reader for students of Mechanical Engineering and Electronics, Plovdiv,1990

German:

1. Dinkova,M.:Deutsch. Ein Text- und Übungsbuch für Studierende aller Fachrichtungen an der TU Sofia, Filiale Plovdiv, Издателство на ТУ София, 1992
2. Dinkova,M./Murdsheva,St.:Deutsch für Techniker,Алма Матер Интернационал, Габрово, 2001
3. Becker, Norbert: Fachdeutsch Technik, Metall- und Elektroberufe, Grundbuch, Max Hueber Verlag, 1995
4. Becker, Norbert: Fachdeutsch Technik, Metall- und Elektroberufe, Übungsheft, Max Hueber Verlag, 1996
5. Zettl,E./Janssen,J.: Aus moderner Naturwissenschaft und Technik, Max Hueber Verlag 1987
6. Buhlmann,R. /Fearn,A: Hinführung zur naturwissenschaftlich-technischen Fachsprache, NTF,Teil

4: Elektronik, Informatik, Max Hueber Verlag 1990.

7. Das Einsteigerseminar, PC&EDV, Grundlagen der Datenverarbeitung, BHV Verlag Düsseldorf, 1989

8. Schiller, E.: Computerwissen für alle, Fachbuchverlag

COURSE DESCRIPTION

Course title Sport	Code: FBE25	Semester: 3
Type of teaching: Exercises	Contact hours per week: 3 hours	Number of credits: 0

LECTURER:

DEPARTMENT OF "PHYSICAL TRAINING AND SPORTS"
Technical University-Sofia, branch Plovdiv

COURSE STATUS IN THE CURRICULUM: Compulsory subject in the curriculum for the major "Computer systems and technologies" and "Electronics", Bachelor's degree.

DESCRIPTION OF THE COURSE: athletics, basketball, swimming, tennis, volleyball, tourism, gymnastics.

METHOD OF ASSESSMENT: Evaluation is based on continuous assessment

DESCRIPTION OF THE COURSE

Name of the course Technical Safety	Code: BCS26	Semester: 4
Type of teaching: Lectures, laboratory work	Lessons per week: L – 2 hours; LW – 1 hour; Self Study – 4	Number of credits: 3

LECTURER:

Assoc. Prof. PhD Margarita Deneva, TU-Sofia, Branch Plovdiv, Faculty of Electronics and Automation, Department of Electrical Engineering; Address: 25 Tsanko Dyustabanov Str., Phone: (032) 965-215

COURSE STATUS IN THE CURRICULUM: Compulsory subject in the curriculum for the major of Electrical Engineering of the Electrical Engineering and Automation Faculty, full-time students, Bachelor of science.

AIMS AND OBJECTIVES OF THE COURSE: The course has to provide students with basic knowledge of labor safety and environment protection.

DESCRIPTION OF THE COURSE: Students get introduced to the legislation, the status of the manufacture traumatism, labor safety and environment protection It treats the conditions of labor in the field of manufacture with the purpose to reduce any manufacture and ecological risks.

PREREQUISITES: The course of lectures and seminars is based on knowledge students have acquired in Physics and Electrical Engineering.

TEACHING METHODS: Lectures and laboratory work.

METHOD OF ASSESSMENT: Written examination.

INSTRUCTION LANGUAGE: Bulgarian.

BIBLIOGRAPHY:

1. Анев Г., Стоянов Ст., Електрически системи – заземление, защиты, безопасност, ABC Техника, София, 2004
2. Ушев Г., Йорданова М., Техническа безопасност, Бряг Принт ООД, Варна, 2003
3. Анев Г., Коларов Д., Електробезопасност при напряжения над 1000V, Лот-Консулт, София, 2007

DESCRIPTION OF THE COURSE

Name of the course Operating systems	Code: BCS27	Semester: 4
Type of teaching: Lectures Laboratory work	Lessons per week: L – 2 hours LW – 2 hours	Credits: 5

LECTURER:

Assoc. Prof. PhD Ivaylo Atanasov (FEA) – tel.: 659 729, email: ivo_atan@tu-plovdiv.bg ,
Technical University of Sofia, branch Plovdiv

COURSE STATUS IN THE CURRICULUM: Mandatory discipline for “Computer systems and technologies”, faculty of “Electronics and automatics”, Technical University – Sofia, branch Plovdiv, bachelor degree

AIMS AND OBJECTIVES OF THE COURSE: The “Operating systems” course aims to give 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. Virtual 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: Programming of computers – part I, II, III, Discrete structures, Synthesis and analysis of algorithms.

TEACHING METHODS: Lectures, exercises on the main topics, solving assignments related to the operating systems.

METHOD OF ASSESSMENT: The final mark is composed from the: students participation in the exercises, the examination test

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 Discrete Structures	Code: BCS28 Bachelor Level	Semester: 4
Type of teaching: Lectures, tutorials and laboratory work	Lessons per week: L – 2 hours; T – 1 hour; LW – 1 hour	Number of credits: 5

LECTURER:

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 for second year students in Computer Systems and Technologies, B.Sc. programme of the Faculty of Electronics and Automatics, Technical University of Sofia, branch Plovdiv.

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. Cartesian 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, Programming and Computer Applications I, II and III.

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

METHOD OF ASSESSMENT: Written test, including theory questions and solving of particular problems.

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 & Theoretical Computer Science: <http://dimacs.rutgers.edu/>

DESCRIPTION OF THE COURSE

Name of the course Synthesis and Analysis of Algorithms	Code: BCS29 Bachelor Level	Semester: 4
Type of teaching: Lectures and laboratory work	Lessons per week: L – 2 hours; LW – 2 hours	Number of credits: 6

LECTURER:

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 for second year students in Computer Systems and Technologies, B.Sc. programme of the Faculty of Electronics and Automatics, Technical University of Sofia, branch Plovdiv.

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: Main topics: Algorithm: main notions. 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 methods. Searching algorithms. Tree and graph algorithms. Theory of algorithms. Heuristic, parallel and stochastic algorithms. Arithmetic algorithms. Algorithm verification.

PREREQUISITES: Mathematics I, II and III, Discrete Structures, Programming and Computer Applications I, II and III.

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

METHOD OF ASSESSMENT: Written test, including theory questions and solving of a particular problem. The overall grade is an aggregation of the test grade (80%) and the course project defence grade (20%).

INSTRUCTION LANGUAGE: Bulgarian.

BIBLIOGRAPHY: 1. Robert Sedgewick, Kevin Wayne, *Algorithms*, 4th ed., Pearson Education, Inc. 2011; 2. В. Боева и Д. Петрова. *Ръководство за лабораторни упражнения: Алгоритми и структури от данни*, Издателство на Технически университет-София, 2012; 3. Робърт Седжуик, *Алгоритми на C*, Софтпрес, 2003; 4. Преслав Наков, Панайот Добриков, *Програмиране ++ Алгоритми*, СофтПрес, 2005; 5. Стойчо Стойчев, *Синтез и анализ на алгоритми*, Издателство "БПС", 2003; 6. T. Cormen, *Introduction to Algorithms*, Second Edition, MIT Press, 2009; 7. T. Cormen, C. Leiserson, R. Rivest, C. Stein, *Introduction to Algorithms*, Second Edition, The MIT Press, Cambridge, Massachusetts London, England, 2001; 8. Robert Sedgewick, *Algorithms in C*, Princeton University, Addison-Wesley Publishing Company, Inc., USA, 1990.

DESCRIPTION OF THE COURSE

Name of the course: Signals and Systems	Code: BCS30	Semester: 4
Type of teaching: Lectures and laboratory work	Lessons per week: L – 2 h; LW – 1 h.	Credits: 5

LECTURER: Assist. Prof. Iliya E. Petrov, Ph.D., Department of Electronics,
e-mail: iedu@abv.bg, Technical University - Sofia, branch Plovdiv

COURSE STATUS IN THE CURRICULUM: The course is compulsory for bachelor degree students of Computer Systems and Technology in Faculty of Electronics and Automatics in Technical University - Sofia, branch Plovdiv.

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

DESCRIPTION OF THE COURSE: The main topics concern: Spaces of the signals; Bases; Fundamental input signals; Description of the signals in time domain; Forms of Fourier Series, Properties of Fourier transformation; LTI continuous and discrete systems – description, properties and characteristics; Laplace and z-transformation; System functions; Pole-zero diagram; Analogue and digital methods for radio signal forming; Spectra of AM, FM and PAM signals; Application of modulations.

PREREQUISITES: Good knowledge of Mathematics, Physics and Electrical Engineering.

TEACHING METHODS: Lectures with multimedia projector for some formulas, tables of transforms, properties and theorems. Solving practical problems on lectures and labs. On labs is used MATLAB.

METHOD OF ASSESSMENT: Exam– 50%; labs – 20%; control work– 30%.

INSTRUCTION LANGUAGE: Bulgarian.

BIBLIOGRAPHY:

1. Nenov G., Signals and Systems, Novi znania, Sofia, 2008.
2. Ferdinandov E., Signals and Systems (part 1 and 2), Siela, Sofia, 1998.
3. Openheim A., A. Willsky, I. Young, Signals and Systems, Tehnika, Sofia, 1993.
4. Stefanova K., B. Koen, I. Petrov, Signals and Systems Labs Guide, TU-Sofia, 2009.
5. Siebert W., Circuits, Signals, and Systems, Mir, Moscow, 1988.
6. Baskakov S., Radiotechnical circuits and signals, Visshaja shkola, Moscow, 2000.
7. Karris St., Signals and Systems with MATLAB Computing and Simulink Modelling, Orchard Publ., 2007.



DESCRIPTION OF THE COURSE

Name of the course Analysis and Design of Logic Circuits	Code: BCS31	Semester: 4
Type of teaching: Lectures, laboratory work	Lessons per week: L – 2 hours; LW – 2 hour	Number of credits: 6

LECTURER:

Assistant Prof. Ph.D. Valentin Mollov (FEA), Dept. CST – tel.: 659 728,
Technical University of Sofia, branch Plovdiv,
e-mail: vmollov@tu-plovdiv.bg

COURSE STATUS IN THE CURRICULUM: Compulsory course for the students in BSc program in Computer systems and technologies.

AIMS AND OBJECTIVES OF THE COURSE: The aim of the course is to establish sound knowledge in computer hardware fundamentals.

DESCRIPTION OF THE COURSE:

The course comprises theoretical fundamentals of computer hardware namely Boolean algebra and Automata theory, as well as all practical aspects of digital circuits design and analysis. A number of lectures and laboratory exercises are devoted to design moderately complex circuits built from gates and basic logic elements (decoders, coders, multiplexers, etc.). The second part of the course deals with sequential circuits design and studying flip-flops, registers and counters. Contemporary methods and tools for logic simulation and verification are considered at the end of the course.

PREREQUISITES: Good knowledge in Mathematics.

TEACHING METHODS: Lectures and laboratory workshops.

METHOD OF ASSESSMENT: Knowledge assessment includes the following components - two tests during the semester (40%) and written exam (60%).

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY:

1. Моллов В., Анализ и синтез на логически схеми, ТУ - София, 2016 г.
(Mollov V., Analysis and Design of Logic Circuits, TU – Sofia, 2016).
2. Иванов С., Петкова Ю., Анализ и синтез на логически схеми, ТУ - Варна, 2009 г.
(Ivanov S., Petkova J., Analysis and Design of Logic Circuits, TU – Varna, 2009).
3. Михов Г., Цифрова схемотехника, ТУ – София, 2005 г.
(Michov G., Digital Circuits design, TU-Sofia, 2005).
4. Балканджиев Л., Пандов Е., Анализ и синтез на логически схеми, ТУ - София, 2003 г.
(Balkandzhiev L., Pandov E., Analysis and Design of Logic Circuits, TU - Sofia, 2003).
5. Иванов С., Петкова Ю. и др., Ръководство по анализ и синтез на логически схеми, Варна, 2005
(Ivanov S., Petkova J., Tutorial on Analysis and Design of Logic Circuits, TU - Varna, 2005).
6. Alan Clements, The principles of Computer Hardware, Oxford University Press, 2006.
7. www.scribd.com/doc/135290251/Анализ-и-синтез-на-логически-схеми
8. www.asic-world.com/verilog/veritut.html

9. www.vol.verilog.com/
10. www.euler.ecs.umass.edu/ece232/pdf/03-verilog-11.pdf
11. www.cseweb.ucsd.edu/classes/wi14/cse140L-a/modelsim_tut.pdf

COURSE DESCRIPTION

course title FOREIGN LANGUAGE	Code: FBE32	Semester: 4
Type of teaching: SEMINARS, SELF-STUDY	Contact hours per week: Seminars – 2hours, Self Study – 4 hours	Number of credits 0

LECTURERS:

Telephone:

E-mail:

Sen. Lect Penka Taneva – Kafelova (FME, English)

659 722

p.taneva@tu-plovdiv.bg;
BonaFide@plovdiv.techno-link.com

Sen. Lect Nadya Popova (FME, English)

659 707

n.popova@tu-plovdiv.bg

Sen. Lect Konstantina Nyagolova (FME, English)

659 722

konstantinanik@yahoo.com

COURSE STATUS IN THE SYLLABUS: Compulsory for the students majoring in “Computer systems and technologies” and “Electronica”, at the Faculty of Electronics and Automation, Sofia Technical University, Plovdiv Branch, Bachelor’s Degree.

COURSE OBJECTIVES: Targeted at further developing of students’ knowledge and practical skills in the specific foreign language.

COURSE DESCRIPTION: The foreign language teaching is in either of two languages of equal academic status: English or German. It is carried out at the respective levels determined through placement tests, based on the principal foreign language studied at secondary school. No AB groups are formed. Apart from the general foreign language the curricula include English or German for specific purposes in accordance with students’ major subjects.

PREREQUISITES: The curricula in both languages presume the minimum of language knowledge and skills acquired at secondary school and a completed course in a foreign language in Semester 1.

TEACHING METHODS: Seminars using modern technical equipment: language lab, audio and video, as well as multimedia.

METHODS OF TESTING AND EVALUATION: Evaluation is based on continuous assessment, two tests and a course project.

LANGUAGE OF INSTRUCTION: English/German

LITERATURE RECOMMENDED:

English:

10. Headway English, OUP
11. Oxford English for Electrical and Mechanical Engineering, OUP,1997
12. English for Science and Technology – 1989
13. English for Electronics and Telecommunications, Alma Mater, 2001
14. English for Electrical Engineering, Alma Mater, 2001
15. Quick Launch into English, PUP, 1997
16. Basic Technical English, OUP, 1996
17. Collins Cobuild English Course - 1988
18. Reader for students of Mechanical Engineering and Electronics, Plovdiv,1990

German:

8. Dinkova,M.:Deutsch. Ein Text- und Übungsbuch für Studierende aller Fachrichtungen an der TU Sofia, Filiale Plovdiv, Издателство на ТУ София, 1992
9. Dinkova,M./Murdsheva,St.:Deutsch für Techniker,Алма Матер Интернационал, Габрово, 2001
10. Becker, Norbert: Fachdeutsch Technik, Metall- und Elektroberufe, Grundbuch, Max Hueber Verlag, 1995
11. Becker, Norbert: Fachdeutsch Technik, Metall- und Elektroberufe, Übungsheft, Max Hueber Verlag, 1996
12. Zetl,E./Janssen,J.: Aus moderner Naturwissenschaft und Technik, Max Hueber Verlag 1987
13. Buhlmann,R. /Fearn,A: Hinführung zur naturwissenschaftlich-technischen Fachsprache, NTF,Teil

4: Elektronik, Informatik, Max Hueber Verlag 1990.

14. Das Einsteigerseminar, PC&EDV, Grundlagen der Datenverarbeitung, BHV Verlag Düsseldorf, 1989

8. Schiller, E.: Computerwissen für alle, Fachbuchverlag

COURSE DESCRIPTION

Course title Sport	Code: FBE33	Semester: 4
Type of teaching: Exercises	Contact hours per week: 3 hours	Number of credits: 0

LECTURER:

DEPARTMENT OF “PHYSICAL TRAINING AND SPORTS”
Technical University-Sofia, branch Plovdiv

COURSE STATUS IN THE CURRICULUM: Compulsory for the students majoring in “Computer systems and technologies” and “Electronica”, at the Faculty of Electronics and Automation, Sofia Technical University, Plovdiv Branch, Bachelor’s Degree.

DESCRIPTION OF THE COURSE: athletics, basketball, swimming, tennis, volleyball, tourism, gymnastics.

METHOD OF ASSESSMENT: Evaluation is based on continuous assessment