DESCRIPTION OF THE COURSE

<table>
<thead>
<tr>
<th>Name of the course</th>
<th>Code: FBE19</th>
<th>Semester: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematics part 3</td>
<td>Lessons per week: L – 2 hours; T – 2 hours</td>
<td>Number of credits: 6</td>
</tr>
</tbody>
</table>

**Type of teaching:** Lectures and Tutorials

**LECTURER:**
Prof. L. Bojadiev Ph.D. (FAMI) – tel.: 9652340, e-mail: janina@einet.bg
Assoc. Prof. D. Marinova Ph.D. (FAMI) – tel.: 9652378, e-mail: dmarinova@dir.bg

Technical University of Sofia

**COURSE STATUS IN THE CURRICULUM:** Compulsory for the students from specialty direction “Electronics” of Technical University of Sofia, bachelor degree.

**AIMS AND OBJECTIVES OF THE COURSE:** At the end of the course the students are expected to be able to work with function of a complex variable, Fourier’s series, to apply the methods of the operational calculus for certain class problems in ordinary differential equations, to solve problems from the following fields: Operational calculus, Probability theory, Mathematical statistics.

**DESCRIPTION OF THE COURSE:** The main topics concern: Function of a complex variable, Fourier’s series, Operational calculus, Probability theory, Mathematical statistics.

**PREREQUISITES:** Mathematics part 1 and Mathematics part 2 (Differential and integral calculus of function of single and multiple real variables, Linear algebra, Analytical geometry, Ordinary differential equations).

**TEACHING METHODS:** Traditional lectures and tutorials.

**METHOD OF ASSESSMENT:** Two tests at the middle and the end of the term (20%) and written exam during the session (80%)

**INSTRUCTION LANGUAGE:** Bulgarian

**BIBLIOGRAPHY:**

3. L. Bojadiev, O. Kamenov, Higher mathematics 4, CIELA, Sofia, 2002 (Bulgarian)
5. FAMI collective, Selected mathematical chapters, Modulus V, TU-Sofia,1993 (Bulgarian)
7. L. Bojadiev, M. Todorov, Multiple, curved and surface integrals, TU-Sofia, 1992. (Bulgarian)

**DESCRIPTION OF THE COURSE**

<table>
<thead>
<tr>
<th>Name of the course:</th>
<th>Code: FBE20</th>
<th>Semester: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory of Electrical Engineering</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of teaching:</th>
<th>Lessons per week:</th>
<th>Number of credits:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lectures, Tutorials and laboratory work</td>
<td>L-3 hours, Tut-2 hours, LW-1 hour</td>
<td>7</td>
</tr>
</tbody>
</table>

**LECTURER:**
Assoc. Prof. Zhivko Georgiev Ph.D. (FA), tel.:965 3181, e-mail: zhdgeorg@tu-sofia.bg
Assoc. Prof. Snejana Terzieva Ph.D. (FA), tel.:9652394, e-mail: ster19@tu-sofia.bg
Assoc. Prof. Simona Petrakieva. Ph.D. (FA), tel:9652388, e-mail: petrakievas-te@tu-sofia.bg
Technical University of Sofia

**COURSE STATUS IN THE CURRICULUM:** The course is compulsory for full-time and part-time students for receiving the B.Sc. degree in Electronics, Telecommunications and Computer Systems and Technology in FETT, FTC, FKSU at the Technical University of Sofia.

**AIMS OF THE COURSE:** To teach students the basic methods of analysis of linear circuits with lumped parameters and to give basic concepts of the theory of nonlinear circuits and the theory of electromagnetic field.

**DESCRIPTION OF THE COURSE:** The course includes basic concepts and laws for electric circuits, sinusoidal steady-state analysis of linear circuits, transformations of electric circuits, magnetically coupled circuits, methods for analysis of linear circuits, properties and theorems for electric circuits, resonance, three-phase circuits, two-port networks, the classical method of studying transients in linear circuits, basics notions of the theory of nonlinear circuits and the theory of electromagnetic field.

**PREREQUISITES:** Mathematics I, II and III and General Physics I and II.

**TEACHING METHODS:** Lectures, group seminars, laboratory practice with laboratory sets and appropriate measuring instruments. Written laboratory practice reports are required from students that are checked by the teacher. A course project with PSpice is included also. Each student has to prepare a course project assignment using a PC in the PSpice environment.

**METHOD OF ASSESSMENT:** A written examination at the end of the third semester. Test paper including two problems during the tutorials. Defending the course project assignment and laboratory practice reports. The final result is obtained by aggregation of the marks from the written examination, test paper, laboratory practice reports and course project assignment.

**INSTRUCTION LANGUAGE:** Bulgarian

**BIBLIOGRAPHY:**
DESCRIPTION OF THE COURSE

<table>
<thead>
<tr>
<th>Name of the course</th>
<th>Code: <strong>FBE21</strong></th>
<th>Semester: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical Measurements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of teaching: Lectures and laboratory work</td>
<td>Lessons per week: L – 2 hours; LW – 1 hour</td>
<td>Number of credits: 5</td>
</tr>
</tbody>
</table>

**LECTURER:**
Assoc. Prof. V. Ivancheva Ph.D., (FA) - tel.: 965 3491, e-mail: vivancheva@yahoo.com, Technical University of Sofia

**COURSE STATUS IN THE CURRICULUM:** Compulsory for the student specialty “Telecommunications” BEng programme of the Faculty of Telecommunications.

**AIMS AND OBJECTIVES OF THE COURSE:** At the end of the course the students is suppose to be able to apply the knowledge for basic types of devices and methods for measurement of electrical, magnetic and non-electrical quantities, methods for processing of measurement results, evaluation of different type of errors. They have to be able to apply them for future engineering tasks as specialists in the area of scientific researches and practice.

**DESCRIPTION OF THE COURSE:** The main topics concern: Basic concepts of theory of electrical measurements – definitions, types of methods, devices and errors, processing of measurement results, unity of measurement; Electromechanical transducers and instruments – different types. Measurement of electrical quantities – current, voltage, power and energy, DC resistance, parameters of AC circuits; Electronic measurement converters and instruments; Digital measurement converters and instruments; Microprocessor based instruments and measurement systems – basic concepts; Measurement of magnetic quantities and parameters of magnetic materials; Measurement of non-electrical quantities – transducers, methods and instruments.

**PREREQUISITES:** Physics, Mathematics, Mechanics, Electrical Engineering.

**TEACHING METHODS:** Lectures, using subsidiary materials and tutorials, Multimedia presentations, laboratories with individual reports and test, team working.

**METHOD OF ASSESSMENT:** Written examination at the end of semester (80%), laboratories (20%).

**INSTRUCTION LANGUAGE:** Bulgarian

DESCRIPTION OF THE COURSE

<table>
<thead>
<tr>
<th>Name of the course</th>
<th>Code: FBE22</th>
<th>Semester: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semiconductor Devices</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Type of teaching: Lectures and laboratory work

Lessons per week: L – 3 hours; LW – 2 hours

Number of credits: 6

LECTURER:
Assoc. Prof. E. Manolov Ph.D. (FETT) – tel.: 965 3269, e-mail: edm@tu-sofia.bg
Assoc. Prof. T. Vasileva Ph.D. (FETT) – tel.: 965 2740, e-mail: tkv@tu-sofia.bg
Prof. M. Hristov Ph.D. (FEET) – tel.: 965 2220, e-mail: mhristov@tu-sofia.bg
Technical University of Sofia

COURSE STATUS IN THE CURRICULUM: Compulsory for the students form specialty “Telecommunications”, BEng programme of the Faculty of Telecommunications.

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.


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 works, protocols preparation and defence.

METHOD OF ASSESSMENT: Two one-hour assessments at mid and end of semester with test questions of laboratory exercises (40%), and exam test (60%).

INSTRUCTION LANGUAGE: Bulgarian

DESCRIPTION OF THE COURSE

<table>
<thead>
<tr>
<th>Name of the course</th>
<th>Code: FBE23</th>
<th>Semester: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Programming and computer application III</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of teaching:</th>
<th>Lessons per week:</th>
<th>Number of credits:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lectures and laboratory work</td>
<td>L – 2 hours; LW – 2 hours</td>
<td>6</td>
</tr>
</tbody>
</table>

LECTURER:
Assoc. Prof. Todorka Dimitrova Ph.D. (FCSC), tel.: 965 3453, e-mail: dora@tu-sofia.bg
Assoc. Prof. Daniela Gotseva Ph.D. (FCSC), tel.: 965 2338, e-mail: dgoceva@tu-sofia.bg
Prof. Alexander Bekiarsky Ph.D. (FTC), tel: 965 2674, e-mail: aabbv@tu-sofia.bg
Technical University of Sofia

COURSE STATUS IN THE CURRICULUM: Compulsory for bachelor degree students of the professional direction “Communications, Computer and Electronic Techniques”

AIMS AND OBJECTIVES OF THE COURSE: The aim of the course is to teach the students with the Java programming language regardless of its environment. The accent of the course is upon the syntax and semantics of the language constructs. Different approaches are presented for achieving a given aim and the advantages and the disadvantages of the concrete implementations. Special attention for Java GUI is taken.

DESCRIPTION OF THE COURSE: The main topics concern: object-oriented programming, structure of Java program; Expressions and operators, Java variables, declarations and assignment; Control structures, branches and loops, exceptions – catch and process exceptions; Java objects, class declaration, class members, methods, constructors, overriding methods, static fields and methods, objects as instance of classes, create, initialize, assignment and destroy of objects, fields and methods access, wrapper classes, classes typecasts; Arrays – declaration, definition, initialization, sorting and searching; Strings – declaration, casting, comparison, String class, creation and initialization of strings, string operations; inheritance, derived classes and inheritance, access to the components of base and derived classes, predefined variables, predefined methods, constructors calling, constructors with parameters, abstract methods and classes, interfaces; Java GUI; Swing components, packages, I/O streams, collections etc.

PREREQUISITES: Programming and computer application I, Programming and computer application II, basic knowledge of algorithms

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

METHOD OF ASSESSMENT: One 1.5-hour assessment at end of semester (65%), laboratories (25%), homework (10%)

INSTRUCTION LANGUAGE: Bulgarian

Name of the course: Foreign Language
Code: FBE24
Semester: 3

Method of Teaching:
Tutorials
Lessons per week:
Tutorials – 2 hours
Credit Value: 0

LECTURERS:

ENGLISH: Senior Lecturers Deniza Bogomilova Zaharieva, 965-31-52, denizaz@tu-sofia.bg,
GERMAN: Senior Lecturer Pavlina Ivanova Zlateva, 965-31-60, pavlina.zlateva@gmail.com,
RUSSIAN: Senior Lecturer Angelina Paraskova Radeva, 965-31-62, agato@omega.bg,
FRENCH: Senior Lecturer Antoniya Slaveikova Velkova, 965-31-64, avelkova@tu-sofia.bg.

COURSE STATUS IN THE CURRICULUM: Compulsory for full-time students of all specialties of the Faculty of Telecommunications at TU-Sofia required for obtaining Bachelor’s Degree.

AIMS AND OBJECTIVES OF THE COURSE: The aim of the foreign language education is to enable students in using scientific literature and specialized texts, as well as to enhance their communicative competence adopting culturally appropriate modes of behaviour relevant to the concrete situation and apply effective compensatory strategies in overcoming communicative problems. The additional practice of micro and macro language skills are targeted at preparing students for successful participation in international scientific conferences and symposia, graduate and post-graduate exchange programmes sponsored by the EU or bilateral agreements with partner universities.

DESCRIPTION OF THE COURSE: The students are taught according to a flexible modular system, adjusted to the three proficiency levels identified by means of an entry test in the respective language. The programme of study consolidates and enriches the linguistic knowledge acquired in secondary schools with new categories, notions and lexis characteristic for each discipline. By means of authentic course books the students gain in-depth knowledge in grammar, syntax, word formation, phraseology, and specialized terminology. Foreign language education builds up communicative abilities and competence allowing students to socialize and function effectively in real-life professional situations. They develop the four language skills / Listening, Reading, Speaking and Writing/ aiming to facilitate their adequate auditory and visual comprehension of information, offered in a foreign language, as well as their active ability to respond in keep with the stylistics and norms of multicultural communication. The correlation general to specialized language is 1:2. The modern equipment and facilities of the Department of Foreign Language Teaching and Applied Linguistics allows the use of up-to-date audio-visual and technical equipment such as: language labs, VDU, cassette recorders, OHP-s, and computers.

PREREQUISITES: The course of study requires basic knowledge of the language and elementary rules of grammar and basic lexical items and their use, taught at secondary schools and vocational schools.

TEACHING METHODS: The selection and structuring of syllabus content is carried out by way of an integrated theoretical-practical communicative approach, taking into consideration the functional needs of students to use the language competently in cross-cultural and professional medium. Various interactive methods of classroom management are applied, such as discussions, presentations, case studies, role, theme projects, computer tests in grammar and lexicology on different proficiency levels, as well as translation of specialized scientific texts. The modular principle of foreign language teaching allows for a synthesis of a learner-centered seminar work in a given sphere with individual forms of study and self-study.

METHODS OF ASSESSMENT: In addition to the ongoing assessment, based on the participation of students in workshops, presentations and written tests during the semester, the final exams are administered in the form of standard EU recognized exit tests on several proficiency levels to estimate the achieved progress and quality of acquired knowledge. Some specialties request that part of the final assessment includes translation of an abstract from a scientific book in a subject-specific field from a foreign language into Bulgarian. The final grade is made on the basis of two written tests for the period of training throughout the semester (an overall of 80%) and active participation in seminars and workshops and individual presentations (an overall of 20%).

LANGUAGES OF INSTRUCTION: English, German, French, Russian.

RECOMMENDED TEACHING MATERIALS: A number of course materials and textbooks have been developed under European projects and in collaboration with the British Council and Goethe Institute in the sphere of specialized language teaching for science and business purposes. There are rich resources available at the English, German and French Departmental libraries and multimedia packages of original software programmes in FLT.
CHARACTERISTICS OF THE COURSE

<table>
<thead>
<tr>
<th>Name of the course:</th>
<th>Code: FBE25</th>
<th>Semester: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sports</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of teaching:</td>
<td>Lessons per week:</td>
<td>Number of credits: 0</td>
</tr>
<tr>
<td>Tutorials</td>
<td>T – 3 hours</td>
<td></td>
</tr>
</tbody>
</table>

**LECTURERS:**

Prof. Ivan Jordanov Bozov, Senior Lecturer Ivan Petrov Venkov;
Senior Lecturer Valeri Georgiev Peltekov, Senior Lecturer Rositsa Yanakieva Kovachki; Senior Lecturer Rumyana Nikolova Vetova, Senior Lecturer Ivan Stoyanov Ivanov; Senior Lecturer Konstantin Petrov Konstantinov, Senior Lecturer Emil Slavi Kolchev, Senior Lecturer Alexander Alexandrov Alexandrov; Senior Lecturer Asya Krasteva Tsarova - Vassileva; Lecturer Krassimira Stoyanova Ivanova; Lecturer Todor Stefanov Ivanov, Lecturer Georgi Dimitrov Palazov, Senior Lecturer Sonia Danailova Simova-Paspalanova;
Senior Lecturer Rumyana Georgieva Tasheva, Senior Lecturer Mariana Vladimirova Andreeva,
Senior Lecturer Ivan Dimitrov Stefanov, Senior Lecturer Plamen Antonov Antonov, Senior Lecturer Petar Stefanov Nikolov, Senior Lecturer Velizar Vaskov Lozanos, Senior Lecturer Ivan Georgiev Ivanov; Senior Lecturer Georgi Nikolov Stoychev, Senior Lecturer Georgi Petrov Vassilev, Senior Lecturer Kapka Konstantinova Vassileva, Senior Lecturer Petia Yordanova Arbova; Lecturer Milena Milkova Lazarova; Lecturer Valentine Valentinov Velev, Lecturer Dimitar Ivanov Dimov
Technical University - Sofia

**COURSE STATUS IN THE CURRICULUM:** Compulsory discipline for the full-time students of all specialties of Faculty of Telecommunications of TU- Sofia required for obtaining a Bachelor’s Degree.

**AIMS AND OBJECTIVES OF THE COURSE:** The purpose of teaching physical education is through the methods and means of physical education to increase physical activity of students. Additional sporting skills of the respective sport aim to create lasting habits for individual classes in physical education. Talented athletes to protect their honor and prestige to TU-Sofia in sports competitions.

**DESCRIPTION OF THE COURSE:** Students are trained with a flexible modular system, tailored to their abilities and desire, the choice of sport. Programs allow to improve the skills of secondary and primary education in selected sports. Students receive a thorough knowledge of the sport. Sports Complex TU possible to conduct many types of sports. Along with sports practiced outside the sports complex, students learn and improve in 20 different sports.

**TEACHING METHODS:** In structuring the curriculum using practical communicative approach consistent with the functional and physical abilities of students. The modular principle enables learning sporting skills in this sport.

**METHOD OF ASSESSMENT:** Carry out tests of physical ability. Tests for motor skills and habits in different sports.

**INSTRUCTION LANGUAGE:** Bulgarian

**BIBLIOGRAPHY:** Methodological manuals and regulations in selected sports.
**DESCRIPTION OF THE COURSE**

<table>
<thead>
<tr>
<th>Name of the course:</th>
<th>Number: BTC26</th>
<th>Semester: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Introduction to the Specialty 2</strong></td>
<td><strong>Lessons per week</strong></td>
<td><strong>Number of credits : 0</strong></td>
</tr>
<tr>
<td>Type of teaching:</td>
<td>L – 1 hour</td>
<td></td>
</tr>
<tr>
<td>Lectures</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**LECTURERS:**

Leading lecturers from the Faculty of Telecommunications.
Tel. 965 3095 e-mail: fktt-dekan@tu-sofia.bg;
Technical University of Sofia

**COURSE STATUS IN THE CURRICULUM:** Compulsory for all students of specialty “Telecommunications”, Faculty of Telecommunications, educational-qualification degree: Bachelor.

**AIMS AND OBJECTIVES OF THE COURSE:** The aim of the course is to give initial knowledge to the students after the first year of study in the field of telecommunications to orient them in its specific fields, applications and opportunities for realization.

**DESCRIPTION OF THE COURSE:** The course "Introduction to the specialty-2" is provided for the students who have just finished their first year of education, where they have studied only fundamental courses. Thematic lectures are foreseen, related to different fields of modern telecommunications, networks and technologies. The course introduces the students with the telecom market in our country, leading companies offering telecom services, as well as possibilities and perspectives for the realization of the bachelor graduates form the specialty “Telecommunications”.

**PREREQUISITES:** Not required.

**TEACHING METHODS:** The lectures are given by leading lecturers from the faculty in the field of communication networks, radio-communications and video-technologies, technology and management of communication systems and delivered with the support of visual materials, slides, posters.

**METHODS OF ASSESSMENT:** Not required

**INSTRUCTION LANGUAGE:** Bulgarian

**BIBLIOGRAPHY:** Not required
DESCRIPTION OF THE COURSE

<table>
<thead>
<tr>
<th>Name of the course</th>
<th>Code: BTC27</th>
<th>Semester: 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signals and systems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of teaching:</td>
<td>Lessons per week:</td>
<td>Number of credits: 7</td>
</tr>
<tr>
<td>Lectures, Tutorials, Labs,</td>
<td>L – 3 hours; T – 1 hour; Labs-1 hour</td>
<td></td>
</tr>
<tr>
<td>Course work</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

LECTURER:

Prof. Dimitar Tz. Dimitrov Ph.D., FTC, Tel.9652278, e-mail:dcd@tu-sofia.bg
Technical university of Sofia

COURSE STATUS IN THE CURRICULUM: Compulsory for the students specialty Telecommunication, Bachelor degree, Faculty of Telecommunication

AIMS AND OBJECTIVES OF THE COURSE: At the end of the course the students should have professional knowledge on introduction in theory of information, digital and analog signals and systems, signals with different dimensions, basic methods for analysis of signals in temporal and frequency areas, basic processes for signal’s treatment (amplify, modulation, demodulation, filtration, coding), basic methods for investigation of analog and digital systems, Random signals, Noises, Optimal filtration of signals, Influence of determined signals on nonlinear systems,


PREREQUISITES: Mathematics, Physics, Theoretical electro-technique, Semi-conductor devices

TEACHING METHODS: Lectures, laboratory and exercises including both investigation of real signals and systems and computer simulation of signals and systems seminar exercises and course work;

METHOD OF ASSESSMENT: Laboratories (20%), Seminars (20%), Course work (20%) Exam (40%)

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY:
DESCRIPTION OF THE COURSE

<table>
<thead>
<tr>
<th>Name of the course</th>
<th>Code: BTC28</th>
<th>Semester: 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication Circuits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of teaching:</td>
<td>Lessons per week:</td>
<td>Number of credits:</td>
</tr>
<tr>
<td>Lectures, laboratory work, tutorials and Project work</td>
<td>L – 2 hours; LW – 1 hour, T – 1 hour</td>
<td>5+1</td>
</tr>
</tbody>
</table>

LECTURER:
Prof. Georgi Stoyanov Ph.D. (FTC) – tel.: 965 3255, e-mail: stoyanov@ieee.org
Assoc. Prof. Zl. Nikolova Ph.D. (FTC) – tel.: 965 2662, e-mail: zvv@tu-sofia.bg
Technical University of Sofia

COURSE STATUS IN THE CURRICULUM: Compulsory for the students specialty Telecommunications, BEng program of the Faculty of Telecommunications.

AIMS AND OBJECTIVES OF THE COURSE: To give the students a basic knowledge about the theory (description, analysis and synthesis) of passive, active and digital linear circuits and to train them to identify and analyze such circuits, to obtain (by approximation) the transfer function and to synthesize and design the corresponding communication circuit (filter, equalizer or other circuit), using MATLAB or other programs and methods.


PREREQUISITES: Mathematics, Theory of electrical engineering, Signals and systems.

TEACHING METHODS: Lectures using slides. Laboratory works to design, simulate and investigate circuits, performed under guidance and reported by protocols verified by the assistant-professor. Project work with defense. Input and output computer-based control for the Lab. works. All slides for the lectures, copies of pages from popular textbooks, samples of the input and output tests and exam tests are posted in Internet. CD with software for the Project work also is provided.

METHOD OF ASSESSMENT: Two hours written exam with 12-15 problems to be solved. Unlimited usage of any books and sources. Weighting coefficients: written exam – 0,75; lab. works – 0,15; seminars – 0,1.

INSTRUCTION LANGUAGE: Bulgarian

DESCRIPTION OF THE COURSE

<table>
<thead>
<tr>
<th>Name of the course</th>
<th>Code: BTC29</th>
<th>Semester: 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulse and Digital Devices</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Type of teaching: Lectures and laboratory work,
Lessons per week: L – 2 hours; LW – 2 hours
Number of credits: 5

LECTURER:
Assoc. Prof. R. Dinov Ph.D. (FTC) - tel.: 965 31 33, e-mail: rdinov@tu-sofia.bg
Assoc. Prof. B. Nikolova Ph.D. (FTC) - tel.: 965 3203, e-mail: bnikol@tu-sofia.bg
Assoc. Prof. A. Popova Ph.D. (FTC) - tel.: 965 3271, e-mail: antoaneta.popova@tu-sofia.bg
Assoc. Prof. R. Miletiev Ph.D. (FTC) - tel.: 965 2082, e-mail: miletiev@tu-sofia.bg

Technical University of Sofia

COURSE STATUS IN THE CURRICULUM: Compulsory for the students specialty Telecommunications BEng programme of the Faculty of Telecommunications

AIMS AND OBJECTIVES OF THE COURSE: At the end of the course the students are expected to be able to apply theoretical methods for analysis, audio signals digital recording and speech signals coding, to design audio systems and devices, to create multi-channel audio systems, to measure their parameters.

DESCRIPTION OF THE COURSE: The main topics concern: Logical circuits: terms; signals’ parameters; Number systems and codes; Boolean algebra; Bipolar and MOS gates, logical functions AND, OR, NAND, NOR, truth tables; Technological families TTL, pMOS, nMOS, CMOS and BiCMOS; Logical functions’ simplification, Karnaugh maps; Combinational logic- decoders, comparators, multiplexers, demultiplexers; Pulse oscillators, timers; Sequential logic- latches R-S, D, flip-flops registers, counters; All contemporary programmable ICs are included from a practical point of view - memory devices and programmed logic arrays - SRAM, DRAM, ROM, PROM, EPROM, EEPROM, FLASH, PAL, GAL, PLD, FPGA, SPLD, ASI. The course ends with ADC and DAC theory and applications.


TEACHING METHODS: Lectures, using slides, laboratory with written instructions and computer tasks.

METHOD OF ASSESSMENT: Two hour written exam at the end of term (80%) and laboratories (20%).

INSTRUCTION LANGUAGE: Bulgarian

DESCRIPTION OF THE COURSE

<table>
<thead>
<tr>
<th>Name of the course:</th>
<th>Code: BTC30</th>
<th>Semester: 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radio Waves and Radio Transmission Lines</td>
<td>Lessons per week:</td>
<td>Number of credits: 6</td>
</tr>
<tr>
<td>Type of teaching:</td>
<td>L – 3 hours; LW – 1 hour; T - 1 hour</td>
<td></td>
</tr>
<tr>
<td>Lectures, Lab. work, Tutorials</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

LECTURER:
Assoc. Prof. Emil Altimirski Ph.D. (FTC) - tel.: 965 2230, e-mail: altimir@tu-sofia.bg,
Assist. Prof. Boncho Bonev Ph.D. (FTC) - tel.: 965 2870, e-mail: bbonev@tu-sofia.bg

Technical University of Sofia

COURSE STATUS IN THE CURRICULUM: Compulsory for the students of specialty “Telecommunications”, Faculty of Telecommunications, educational-qualification degree: Bachelor.

AIMS AND OBJECTIVES OF THE COURSE: The main aim of the course is to provide a comprehensive knowledge of radio waves propagation and to teach the students how to apply theory in solving practical problems.


PREREQUISITES: Mathematics parts I, II, III and IV; Physics parts I and II and Theory of Electrical Engineering.

TEACHING METHODS: Lectures. Many examples from practice to teach the students how to use their knowledge and to motivate them to learn. The labs are held on a real telecommunication system and are directed to assimilation and enhancement of the acquired knowledge. Laboratory work performed under guidance and protocols produced by the students and verified by the assistant.

METHOD OF ASSESSMENT: Written exam (70%), One-hour assessment at mid of semester (15%), laboratories (15%).

INSTRUCTION LANGUAGE: Bulgarian.

ARRANGEMENT FOR EXAMINATION: No need of preliminary enrollment.

Name of the course: Electromechanical Devices
Code: BTC31
Semester: 4

Type of teaching:
Lectures and laboratory work

Lessons per week:
L – 2 hours; LW – 1 hour

Number of credits: 4

LECTURERS:
Assoc. Prof. George T. Todorov Ph.D. (FEE), tel.: 965 2143, e-mail: gtto@tu-sofia.bg
Assoc. Prof. Miho P. Mihov Ph.D. (FEE), tel.: 965 2137, e-mail: mpmi@tu-sofia.bg
Technical University of Sofia

COURSE STATUS IN THE CURRICULUM: Compulsory course for all full-time and part-time undergraduate students at the Faculty of Telecommunications studying B.Eng. programme.

AIM AND OBJECTIVES OF THE COURSE: The main aim of the course is to provide the students with an understanding of the construction, operating principles and applications of electromechanical devices. On completion of the course the students should be able to know the principle of operation and application of the main components of a power system, the principle of operation and application of the various control, signal and protection electrical apparatuses; to know the construction of the single-phase transformers, induction, synchronous and DC machines, their principle of operation and applications, principles of start-up and speed control.

DESCRIPTION OF THE COURSE: The main topics concern: Introduction to the fundamentals of electricity supply systems – production, transfer, distribution and consumption of electric energy; Basic constructions and electromechanical processes of a range of electrical apparatuses; Basic constructions, principle of operation and steady state performance of electrical machines and their control systems; micro machines; speed control.

PREREQUISITES: Physics, Material Science, Mechanics.

TEACHING METHODS: Lectures using demonstrative aids – photos and details of electrical machines and apparatuses. Laboratory works in teams (4-5 students each) with the aid of manuals. Protocols preparation and defence for each laboratory work to be recognized.

METHOD OF ASSESSMENT: Continuous assessment is used. The final mark is the aggregate of the laboratory work (15-20%) and two one-hour written tests (80-85%) – mid-term and end-term.

INSTRUCTION LANGUAGE: Bulgarian

DESCRIPTION OF THE COURSE

<table>
<thead>
<tr>
<th>Name of the course:</th>
<th>Code: BTC32</th>
<th>Semester: 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Supply Systems</td>
<td>L – 2 hours, LW – 1 hour,</td>
<td>Number of credits: 3</td>
</tr>
</tbody>
</table>

Type of teaching: Lectures and laboratory work.

LECTURERS:
Assoc. Prof. Dimitar Arnaudov Ph.D. (FEET), tel.: 965 2204, e-mail: dda@tu-sofia.bg
Assoc. Prof. Petar Goranov Ph.D. (FEET), tel.: 965 3121, e-mail: pgoranov@ecad.tu-sofia.bg

Technical University of Sofia

COURSE STATUS IN THE CURRICULUM: Compulsory for the students of specialty Telecommunications B.Eng. program of the Faculty of Telecommunications.

AIMS AND OBJECTIVES OF THE COURSE: The aim of the course is to provide the necessary knowledge and skills of students for the principles of operation, types and characteristics of the converter operating as power supplies used in communications equipment. Through laboratory exercises students acquire skills in selection and diagnosis of power supplies.


TEACHING METHODS: Lectures, using slides and specialized software - PSPICE, SwCAD, case studies, laboratory work, work in teams, protocols – description preparation and defence.

METHOD OF ASSESSMENT: Two one-hours assessments at the middle and at the end of semester (80%) plus results of the lab assignments (20%).

INSTRUCTIONAL LANGUAGE: Bulgarian.

CHARACTERISTICS OF THE COURSE

<table>
<thead>
<tr>
<th>Name of the course:</th>
<th>Code: BTC33</th>
<th>Semester: 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sports</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of teaching:</td>
<td>Lessons per week:</td>
<td>Number of credits: 0</td>
</tr>
<tr>
<td>Tutorials</td>
<td>T – 3 hours</td>
<td></td>
</tr>
</tbody>
</table>

LECTURERS:
Prof. Ivan Jordanov Bozov, Senior Lecturer Ivan Petrov Venkov; Senior Lecturer Valeri Georgiev Peltekov, Senior Lecturer Rositsa Yanakieva Kovachki; Senior Lecturer Rumyana Nikolova Vetova, Senior Lecturer Ivan Stoyanov Ivanov; Senior Lecturer Konstantin Petrov Konstantinov, Senior Lecturer Emil Slavi Kolchev, Senior Lecturer Alexander Alexandrov Alexandrov; Senior Lecturer Asya Krasteva Tsarova - Vassileva; Lecturer Krassimira Stoyanova Ivanova; Lecturer Todor Stefanov Ivanov, Lecturer Georgi Dimitrov Palazov, Senior Lecturer Sonia Danailova Simova-Paspalanova; Senior Lecturer Rumyana Georgieva Tasheva, Senior Lecturer Mariana Vladimirova Andreeva, Senior Lecturer Ivan Dimitrov Stefanov, Senior Lecturer Plamen Antonov Antonov, Senior Lecturer Petar Stefanov Nikolov, Senior Lecturer Velizar Vaskov Lozano, Senior Lecturer Ivan Georgiev Ivanov; Senior Lecturer Georgi Nikolov Stoychev, Senior Lecturer Georgi Petrov Vassilev, Senior Lecturer Kapka Konstantinova Vassileva, Senior Lecturer Petya Yordanova Arbova; Lecturer Milena Milkova Lazarova; Lecturer Valentine Valentinov Velev, Lecturer Dimitar Ivanov Dimov
Technical University - Sofia

COURSE STATUS IN THE CURRICULUM: Compulsory discipline for the full-time students of all specialties of Faculty of Telecommunications of TU-Sofia required for obtaining a Bachelor’s Degree.

AIMS AND OBJECTIVES OF THE COURSE: The purpose of teaching physical education is through the methods and means of physical education to increase physical activity of students. Additional sporting skills of the respective sport aim to create lasting habits for individual classes in physical education. Talented athletes to protect their honor and prestige to TU-Sofia in sports competitions.

DESCRIPTION OF THE COURSE: Students are trained with a flexible modular system, tailored to their abilities and desire, the choice of sport. Programs allow to improve the skills of secondary and primary education in selected sports. Students receive a thorough knowledge of the sport. Sports Complex TU possible to conduct many types of sports. Along with sports practiced outside the sports complex, students learn and improve in 20 different sports.

TEACHING METHODS: In structuring the curriculum using practical communicative approach consistent with the functional and physical abilities of students. The modular principle enables learning sporting skills in this sport.

METHOD OF ASSESSMENT: Carry out tests of physical ability. Tests for motor skills and habits in different sports.

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY: Methodological manuals and regulations in selected sports.