

COURSE DESCRIPTION

Name of the course Mathematics part 3	Code: FBE19	Semester: III
Type of teaching: Lectures, Seminars, laboratory work	Lessons per week: L – 2 hours; T– 2 hours	Number of credits: 6

LECTURER:

Assis. prof., PhD, Georgi Paskalev, Department of mathematics, physics and chemistry ", Tel: 032 659 679, email: g.p.paskalev@abv.bg, University of Sofia, Branch Plovdiv.

COURSE STATUS IN THE CURRICULUM: Compulsory for the students from specialty "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: Written exam during the session.

INSTRUCTION LANGUAGE – Bulgarian

BIBLIOGRAPHY: 1. L. Garnevska, R. Petrova, J. Paneva-Konovska, Complex numbers, Function of a complex variable (Lectures and exercises), ДЕЛИКОМ, 2004, Sofia.(Bulgarian) 2. L. Garnevska, Fourier series. Fourier integral. Fourier transformation. Equations of the Mathematical physics, ПОМИНА, 2007, Sofia. (Bulgarian) 3. L.Boiadjiev, O.Kamenov, Higher mathematics 4, CIELA, Sofia, 2002 (Bulgarian) 4. Marinov M.S., Prodanova K., Theory of probability, TU-Sofia, 2012. 5. Marinov M.S., Prodanova K., Some solved Problems of Theory of probability, TU-Sofia 2013. 6. FAMI collective, Selected mathematical chapters, Modulus V, TU-Sofia,1993 (Bulgarian) 7. Marinov M.S., Analytical functions. Fourier series. Integral transformations, CIELA, Sofia, 1998. (Bulgarian) 8. L. Boiadjiev, M. Todorov, Multiple, curved and surface integrals, TU-Sofia, 1992. (Bulgarian) 9. Prodanova K., Lectures Notices in Statistics, TU-Sofia, 2008.

COURSE DESCRIPTION

Name of the course Theory of Electrical Engineering	Code: FBE20	Semester: III
Type of teaching: Lectures, Seminars, laboratory work	Lessons per week: L – 3 hours; LW – 1 hours; Seminars – 2 hours, 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 Electronics 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: III
Type of teaching: Lectures laboratory exercises	Hours per week: L - 2 hours; LE - 1 hours.	number of credits: 5

LECTURER: Associate Professor, PhD **Vania Iordanova Rangelova** Department "Electrical engineering", tel 032 659 685, cab. 3325, 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 „Electronics“ on FEA TU-Sofia, Plovdiv Branch for the academic degree "Bachelor."

PURPOSE OF THE COURSE: Electrical measurements is a fundamental discipline, it aims 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. Vania Rangelova, Lecture notes in Electrical Measurements, Technical University of Sofia –branch Plovdiv, 2011;
2. Vania Rangelova, 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. Sergeev A., Krohin V. Metrology, Moskow - Logos, 2001

DESCRIPTION OF THE COURSE

Name of the course Semiconductors Devices	Code: FBE22	Semester: III
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
TechnicalUniversityofSofia - BranchPlovdiv, Department of Electronics

COURSE STATUS IN THE CURRICULUM:

Compulsoryforthestudentsfromspecialty Electronics, BEngprogrammeoftheFacultyof Electronics andAutomation

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 (80 %), laboratory exercises (20%),

INSTRUCTION LANGUAGE– Bulgarian

BIBLIOGRAPHY:1.Христов, М.. Полупроводникови елементи, Нови знания, 2007; 2. Дандаров, А. Оптиелектроннипробори 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. ThomasL. Floyd, Electronicdevices, 1988.

DESCRIPTION OF THE COURSE

Name of the course Programming and Computer Application III	Code: FBE23	Semester: III
Type of teaching: Lectures Laboratory work	Lessons per week: Lectures — 2 hours Laboratory work — 2 hour	Number of credits: 6

LECTURER:

Assist. 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 CHARACTERISTICS

Course Title Foreign language III	Code: FBE24	Semester: III
Type of Teaching: seminars	Contact hours per week: S – 2 hours	Number of credits: 0

LECTURERS:

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

Sen. Lect. Nadya Popova (FME, English)

Sen. Lect. Konstantina Nyagolova (FME, English)

Sen. Lect. Anet Arabadjieva (FME, English)

Lect. Nadezhda Geshanova (FME, English)

Lect. Daniela Valeva (FME, English)

Sen. Lect. Mariana Dinkova (FME, German)

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COURSE STATUS IN THE SYLLABUS: Compulsory for the students majoring in Electronics at the Faculty of Electronics and Automation, Bachelor's Degree.

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

COURSE DESCRIPTION: During the first three semesters the foreign language teaching is in either of two languages of equal academic status: English or German. The language training 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 the students' major subject.

PREREQUISITES: The curricula in both languages presume the minimum of language knowledge and skills acquired at secondary school.

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 and two tests at the end of semesters 2 and 3.

LANGUAGE OF INSTRUCTION: English/German

LITERATURE RECOMMENDED:

English:

1. *New Headway English, OUP*
2. *Speak Out, Pearson*
3. *Technical English 1, 2, 3, 4, David Bonamy, Pearson*
4. *English for Computing, OUP*
5. *English for Electrical Engineering, OUP*
6. *English for Electrical Engineering, Alma Mater International, 2001*
7. *English for Computing, Alma Mater International, 2001*
8. *Reader for students of Mechanical Engineering and Electronics, Plovdiv, 1990*
9. *Intelligent Business 1, 2, 3, 4, Irene Barall, Nikolas Barall, Pearson*
10. *ProFile1 Pre-intermediate, Jon Naunton, Oxford University Press, 2005*
11. *ProFile2 Intermediate, Jon Naunton, Oxford University Press, 2005*
12. *Business Basics, David Grant and Robert McLarty, Oxford University Press.*

13. *Business Objectives*, Vicki Hollett, Oxford University Press
14. *Business Opportunities*, Anna&Terry Phillips, Oxford University Press
15. *Business Challenges*, Nina O'Driscoll, Fiona Scott-Barret, Longman
16. *Quick Launch into English*, Ivan Shotlekov, Penka Taneva, PUPress
17. *Developing Business Contacts*, OUP
18. *How To Be British*, Magazine, John Hoover, 1998

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 Leipzig, 1990

COURSE CHARACTERISTICS

Course Title Sports	Code: FBE25	Semester: III
Type of Teaching: seminars	Contact hours per week: S – 3 hours	Number of credits: 0

LECTURERS:

Assoc. Prof. Valentin Vladimirov – Theory and Methodology of PE and Sports Workouts (Methodology of Remedial Exercises); Orienteering

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Sen. Lect. Penka Meleva - Theory and Methodology of PE and Sports Workouts (Methodology of Remedial Exercises); Swimming

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Sen. Lect. Dr. Daniel Vladimirov - Theory and Methodology of PE and Sports Workouts (Methodology of Remedial Exercises); Orienteering

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Sen. Lect. Dr. Krassimir Djaldeti - Theory and Methodology of PE and Sports Workouts (Methodology of Remedial Exercises); Athletics

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Lect. Dr. Ptar Doganov Theory and Methodology of PE and Sports Workouts (Methodology of Remedial Exercises); Athletics

659 648

COURSE STATUS IN THE SYLLABUS: Compulsory for all students at both faculties of the Technical University of Sofia, Plovdiv Branch in their 1st and 2nd year (semesters 1, 2, 3 and 4).

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

COURSE DESCRIPTION: 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 unfavorable 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 unfavorable 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.

METHODS OF TESTING AND EVALUATION: Evaluation is based on functional tests at the end of semester. Lecturer's signature is required at the end of semester.

LANGUAGE OF INSTRUCTION: Bulgarian and English (only for foreign language students).

LITERATURE RECOMMENDED:

1. Владимиров В. Туризм и ориентиране. Методическо ръководство за студентите от ТУ София, филиал Пловдив. Издателство на ТУ - София. 2010.
2. Матикова С. Методично ръководство за начално обучение по тенис за студенти (второ преработено и допълнено издание), 2012.

DESCRIPTION OF THE COURSE

Name of the course: Signals and Systems	Code: BE26	Semester: IV
Type of teaching: Lectures and laboratory work	Lessons per week: L – 2 h; LW – 1 h.	Credits: 3

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 Electronics 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 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– 40%; labs – 20%; control works– 20% each.

INSTRUCTION LANGUAGE: Bulgarian.

BIBLIOGRAPHY:

1. Nenov G., Signals and Systems, Novi znanja, 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: Electronic circuits theory	Code: BE27	Semester: IV
Type of teaching: Lectures, Laboratory work	Lessons per week: L-2 hours, LW-2 hour.	Credits: 5

LECTURER: Assoc. Prof. PhD Tsvetana Grigorova, (FEA), e-mail: c_gr@tu-plovdiv.bg,
Technical University of Sofia, Branch Plovdiv

COURSE STATUS IN THE CURRICULUM:

Compulsory for the students specialty "Electronics" BEng programme of FEA.

AIMS AND OBJECTIVES OF THE COURSE: The goal of the course is to make students able to design various kinds of analogue electronic circuits by using appropriate Electronic Computer Aided Design (ECAD) systems. After completing the course they should be able to apply the ECAD methodology and perform: Schematic design; modelling of BJT, FET and MOS Transistor; Macromodelling of FET/Bipolar and CMOS Integrated Operational Amplifier; Analog Circuits Design and Optimization and Active Filters Computer-Aided Design.

DESCRIPTION OF THE COURSE: The Theory of electronic circuits is a fundamental course in the curriculum in Electronics. The main topics included are as follows: Electronic Computer Aided Design (ECAD) methodology, Schematic design, Semiconductor device modelling, Analysis and synthesis of active filters and computer simulations.

PREREQUISITES: It is assumed that learners are familiar with mathematics, theoretical basis of electrical engineering, electronic components and circuit's construction and functioning.

TEACHING METHODS: Lectures. The laboratory work and the course work give the students practical skills in using the general-purpose CAD systems under the assistant guidance. Protocols produced by the students and verified by the assistant. The newest available student versions of the studied program products are used for the laboratory work. Manuals and user's guides are accessible for the students.

METHOD OF ASSESSMENT: Written exam.

INSTRUCTION LANGUAGE: Bulgarian.

LEARNING MATERIALS: The course materials are available in various media in Bulgarian and English languages. Printed materials: (1) Т. Тодоров, Методически указания по теория на електронните схеми, ТУС, 2014, ISBN 978-619-167-075-8; (2) Шойкова Е., Синтез на активни филтри, ТУС, 2000, ISBN 954-9952-19-3; (3) Fitzpatrick, D., Analog Design and Simulation using OrCAD Capture and PSpice, Elsevier Ltd., Oxford, 2012; (4) Raut R.M. Swamy., Modern Analog Filter Analysis and Design, 2010 WILEY-VCH Verlag & Co. KGaA, Weinheim, Germany, ISBN 978-3-527-40766-8.

DESCRIPTION OF THE COURSE

Name of the course: Control Theory	Code: BE28	Semester: IV
Type of teaching: Lectures and laboratory work	Lessons per week: L – 2 LW – 2	Number of credits: 4 1.1

Lecturer: Assoc. Prof. PhD. Sevil Ahmed, Technical University Sofia, Branch Plovdiv, Faculty of Electronics and Automatics (FEA), Control Systems Department, Phone: 032 659585, Email: sevil.ahmed@tu-plovdiv.bg.

COURSE STATUS IN THE CURRICULUM: Compulsory for the student's specialty "Electronics" BEng programme of the Faculty of Electronics and Automatics

AIMS AND OBJECTIVES OF THE COURSE: The aim of the course is to give the students essential knowledge and skills in Automatics, including some problems of the analysis and synthesis of automatic control systems.

DESCRIPTION OF THE COURSE: The course considers linear automatic control systems – basic definitions, principles of automatic control, control laws, classification of control systems; Mathematical models of control systems – differential equations, linearization, transfer function, block diagram models and transformations; Forced response of basic dynamic units – time and frequency response; Stability of linear systems – definitions, necessary and sufficient conditions, Routh-Hurwitz criterion, Nyquist criterion, Bode criterion; Performance of feedback control systems – time domain performance specifications, steady-state error, performance indices etc.; Linear control system design – Bode frequency-domain method to design compensators. State space description of linear systems. Lyapunov equation. Design by pole assignment; Industrial regulators – P,PI,PD, PID.

PREREQUISITES: Higher Mathematics I, II, III part, Physics I, II part, Theoretical electrotechnics I, II part, Technical Mechanics, Programming and computer systems 1, 2 part, English language.

TEACHING METHODS: Lectures using multimedia; laboratory work using analogue modeling devices and measurement technics, computer-aided design, analysis and simulation, work in teams, protocols.

METHOD OF ASSESSMENT: One two-hour assessment work in the end of the semester (90%). Performance from laboratory works is also considered (10%).

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY:

2. Ishtev, K., *Automatic Control Theory*. Sofia, 2000 (in Bulgarian);
3. Naplatanov, N. et al., *Introduction in Control Theory*, Sofia, 1987 (in Bulgarian);
4. Naplatanov, N., *Bases of Technical Cybernetics*, Vol. 1: Automatic Control Theory. Sofia, Technics, 1976 (in Bulgarian);
5. Voronov, A. A., *Automatic Control Theory*, vol. 1, Moscow, 1986 (in russian);
6. Zaitzev, G. *Theory of Automatic Control and Regulation*. Kiev, 1988 (in russian);
7. Chen, C-T., *Analog & Digital Control System Design*, Oxford University Press, 1993;
8. Dorf, R. C., *Modern Control Systems*. Addison-Wesley Publishing Company, 1989;
9. Nise, N. S., *Control Systems Engineering*, The Benjamin/Cummings Publishing Company, Inc., 1992
10. Saadat, H., *Computational Aids in Control Systems Using MATLAB*, McGraw-Hill, 1993

DESCRIPTION OF THE COURSE

Name of the course Analog electronics	Code: BE29	Semester: IV
Type of teaching: Lectures, seminar and laboratory works	Lessons per week: L – 2 hours; SW– 1hour; LW – 2 hours.	Credits: 7

LECTURER:

Assoc. Prof. PhD I. Rachev, Department of Electronic, Technical University of Sofia
– Plovdiv branch, ph., 032/ 959 718, e-mail: ivr@tu.plovdiv.bg

COURSE STATUS IN THE CURRICULUM:

Compulsory for the students specialty “Electronics” for educational and qualifications degree “bachelor”.

AIMS AND OBJECTIVES OF THE COURSE:

The course introduces in the fundamentals of electronic amplifiers. The aim of the course is to give the students knowledge of analysis and design of the analog systems.

DESCRIPTION OF THE COURSE: The basics of the analysis and design of the analog circuits and systems are covered: Schematics and principle of operation of the basic amplifier circuits with bipolar and MOS transistors, Principle of the feedback, Basic circuits for bipolar and MOS analog integrated circuits, Operational amplifiers (op amps) – basic definitions, electrical characteristics, parameters and op amps applications, Active filters, Power amplifiers and Signal oscillators.

PREREQUISITES: Electrical Engineering Theory, Semiconductor devices, Signals and systems.

TEACHING METHODS: lectures, tutorials, laboratory work, protocols.

METHOD OF ASSESSMENT: Two-hour assessment at the end of the semester (80 %) and laboratory work (20 %).

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY : 1. Рачев И., *Лекционни записки по аналогова схемотехника – I част*, С, изд. на ТУ-София, 2011; 2. Златаров В., Донеvски и др., *Електронни аналогови схеми и устройства*, С., Техника, 1987, 95.; 3. Титце У., Шенк К., *Полупроводниковая схемотехника*, М., Мир 1982; 4. Соклоф, С., *Приложения на аналогови интегрални схеми*, С., Техника, 1990; 4. Comer, D., *Fundamentals of Electronic Circuit Design*, NY, John Wiley & Sons, 2003.

DESCRIPTION OF THE COURSE

Name of the course Optoelectronic and Sensor Devices	Code: BE30	Semester: IV
Type of teaching: Lectures and laboratory work	Lessons per week: L – 2 hours; LW – 1 hour.	Credits: 4

LECTURER:

Ph.D. I. Rachev, Department of Electronic, Technical University of Sofia – Plovdiv branch, ph., 032/ 959 718, e-mail: ivr@tu.plovdiv.bg

COURSE STATUS IN THE CURRICULUM:

Compulsory for the students specialty “Electronics” for educational and qualifications degree “bachelor”.

AIMS AND OBJECTIVES OF THE COURSE:

The course introduces in the optoelectronics and sensor technique. The aim of the course is to give the students knowledge of analysis and design of optoelectronics and other devices with different sensors.

DESCRIPTION OF THE COURSE: The basics of the analysis and design of sensor devices and systems are covered: Principle of the work of different sensors and their characteristics, Basic circuits for signal receiving and processing, The analysis and design of devices and systems, working whit covered sensors.

PREREQUISITES: Electrical Engineering Theory, Semiconductor devices, Signals and systems, Analog electronics.

TEACHING METHODS: lectures, tutorials, laboratory work, protocols.

METHOD OF ASSESSMENT: Two-hour assessment at the end of the semester (80 %) and laboratory work (20 %).

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY : 1. Рачев И., *Лекционни записки по аналогова схемотехника – I част*, С, изд. на ТУ-София, 2011; 2. Соклоф, С., *Приложения на аналогови интегрални схеми*, С., Техника, 1990; 3. Schubert, E. F., *Light Emitting Diodes*, Cambridge University Press, 2006; 4. Johnson M., *Photodetection and Measurement: Maximizing Performance in Optical Systems*, McGraw-Hill 2003; 5. Comer, D., *Fundamentals of Electronic Circuit Design*, NY, John Wiley & Sons, 2003.

DESCRIPTION OF THE COURSE

Name of the course Digital electronics	Code: BE31	Semester: IV
Type of teaching: Lectures, laboratory and seminar work, Course work	Lessons per week: L – 2 hours; LW – 2 hours; SW – 1 hour	Number of credits: 7

LECTURERS:

Prof. Ph.D. Galidiya Petrova (FEA), Dept. of Electronics – tel.: 659 574,
e-mail: gip@tu-plovdiv.bg,

Assistant Prof. Dimitar Yankov (FEA), Technical University of Sofia, branch Plovdiv

COURSE STATUS IN THE CURRICULUM: Compulsory course for the students in B.Sc. program in Electronics.

AIMS AND OBJECTIVES OF THE COURSE: The aim of the course is to provide students with basic knowledge on theoretical and practical aspects of digital and pulse circuits together with the methods for their synthesis and analysis.

DESCRIPTION OF THE COURSE: The main topics concern: Logical function and methods for description and minimization; Digital circuits and methods for their synthesis and analysis together with basic principles for building more complex digital units; Basic elements of digital electronics and types of logic families - TTL, CMOS, BiCMOS, I2L, with their parameters and characteristics; Indicator elements and digital circuits for their control; Design and working principles of relaxation circuits and shapers, mono-vibrators and multi-vibrators, practical circuits with integral timer 555, Schmitt trigger, etc.; DAC, ADC and S/H devices – their basic characteristics and operation;

With seminar and laboratory work it is intended to provide the students with practical skills for designing, investigating, testing and evaluating the performance of digital circuits and devices.

PREREQUISITES: Good fundamental knowledge in the courses: Theoretical Electrotechnic, Semi-conductor electronic devices, Signals and systems, Analogue electronics.

TEACHING METHODS: Lectures and seminar work with solving practical problems, and laboratory work with protocols containing experimental results.

METHOD OF ASSESSMENT: Two hours written exam at the end of semester with solving practical problems (75%), laboratory works (15%) and course work for design of digital circuit with determined functional application (10%).

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY:

1. Mihov G., Digital electronics for BSc students in Electronics, Technical University – Sofia press, 1998;
2. Spasov, Gr., D. Petrova, A. Kostadinov. Digital and microprocessor technology. TU-Sofia, 2019;
3. Konov K., Pulse and digital circuits with integral TTL elements, I and II part, Technica press, 1988;
4. Storey Neil. Electronics, A System Approach, UK Addison Wesley, 1992.

COURSE CHARACTERISTICS

Course Title English Language	Code: BE32	Semester: IV
Type of Teaching: seminars	Contact hours per week: S – 2 hours	Number of credits: 0

LECTURERS:

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

Sen. Lect. Nadya Popova (FME, English)

Sen. Lect. Konstantina Nyagolova (FME, English)

Sen. Lect. Anet Arabadjieva (FME, English) 0892231353

Lect. Nadezhda Geshanova (FME, English)

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COURSE STATUS IN THE SYLLABUS: Compulsory for the students majoring in Electronics at the Faculty of Electronics and Automation, Bachelor's Degree.

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

COURSE DESCRIPTION: During the first three semesters the foreign language teaching is in either of two languages of equal academic status: English or German, and during semesters 4 and 5 only English is taught. The language training is carried out at the respective levels determined through placement tests. No AB groups are formed. Apart from general English, the curriculum includes English for specific purposes in accordance with the students' major subject.

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

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 and one test at the end of semester 5.

LANGUAGE OF INSTRUCTION: English

LITERATURE RECOMMENDED:

1. *New Headway English, OUP*
2. *Speak Out, Pearson*
3. *Technical English 1, 2, 3, 4, David Bonamy, Pearson*
4. *English for Computing, OUP*
5. *English for Electrical Engineering, OUP*
6. *English for Electrical Engineering, Alma Mater International, 2001*
7. *English for Computing, Alma Mater International, 2001*
8. *Reader for students of Mechanical Engineering and Electronics, Plovdiv, 1990*
9. *Intelligent Business 1, 2, 3, 4, Irene Barall, Nikolas Barall, Pearson*
10. *ProFile1 Pre-intermediate, Jon Naunton, Oxford University Press, 2005*
11. *ProFile2 Intermediate, Jon Naunton, Oxford University Press, 2005*
12. *Business Basics, David Grant and Robert McLarty, Oxford University Press.*
13. *Business Objectives, Vicki Hollett, Oxford University Press*
14. *Business Opportunities, Anna&Terry Phillips, Oxford University Press*

15. *Business Challenges*, Nina O'Driscoll, Fiona Scott-Barret, Longman
16. *Quick Launch into English*, Ivan Shotlekov, Penka Taneva, PUPress
17. *Developing Business Contacts*, OUP
18. *How To Be British*, Magazine, John Hoover, 1998

COURSE CHARACTERISTICS

Course Title Sports	Code: BE33	Semester: IV
Type of Teaching: seminars	Contact hours per week: S – 3 hours	Number of credits: 0

LECTURERS:

Assoc. Prof. Valentin Vladimirov – Theory and Methodology of PE and Sports Workouts (Methodology of Remedial Exercises); Orienteering

Telephone:

659 646

E-mail:

valdesv2003@yahoo.com

Sen. Lect. Penka Meleva - Theory and Methodology of PE and Sports Workouts (Methodology of Remedial Exercises); Swimming

659 648

penk1959@abv.bg

Sen. Lect. Dr. Daniel Vladimirov - Theory and Methodology of PE and Sports Workouts (Methodology of Remedial Exercises); Orienteering

659 646

ludarabota@abv.bg

Sen. Lect. Dr. Krassimir Djaldeti - Theory and Methodology of PE and Sports Workouts (Methodology of Remedial Exercises); Athletics

659 648

krsj@abv.bg

Lect. Dr. Ptar Doganov Theory and Methodology of PE and Sports Workouts (Methodology of Remedial Exercises); Athletics

659 648

COURSE STATUS IN THE SYLLABUS: Compulsory for all students at both faculties of the Technical University of Sofia, Plovdiv Branch in their 1st and 2nd year (semesters 1, 2, 3 and 4).

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

COURSE DESCRIPTION: 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:

3. 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 unfavorable environmental factors; develop their physical qualities and experience.
4. 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 unfavorable 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.

METHODS OF TESTING AND EVALUATION: Evaluation is based on functional tests at the end of semester. Lecturer's signature is required at the end of semester.

LANGUAGE OF INSTRUCTION: Bulgarian and English (only for foreign language students).

LITERATURE RECOMMENDED:

3. Владимиров В. Туризм и ориентиране. Методическо ръководство за студентите от ТУ София, филиал Пловдив. Издателство на ТУ - София. 2010.
4. Матикова С. Методично ръководство за начално обучение по тенис за студенти (второ преработено и допълнено издание), 2012.