Name of the course: Higher Mathematics - III	Code: FBpEE17 FpBEE17	Semester: 3
Type of teaching: Lectures and Seminar work	Lessons per week: L – 2 hours; SW – 2 hours.	Number of credits: 7

LECTURER: Assis. prof., PhD, Radka Paskova Koleva, Department of mathematics, physics and chemistry ", Tel: 032 659 681, Technical University of Sofia, Branch Plovdiv.

<u>**COURSE STATUS IN THE CURRICULUM</u>**: Mandatory discipline for specialties: "Electrical engineering", "Automation, information and control engineering".</u>

<u>AIMS AND OBJECTIVES OF THE COURSE:</u> Familiarization the students with basic parts of the mathematical analysis and neighbor mathematical disciplines necessary for application disciplines.

DESCRIPTION OF THE COURSE: Main topics:

- Some notions and basic theorems from the field theory – stream, divergence, circulation, rotation of the vector field, theorems of Green, Gauss and Stokes. Theorem for the independence of the integral from the path.

- Function of one complex variable – limit of function, continuity, derivative of function of one complex variable, analytic function. Cauchy-Riemann conditions(equations), conformal mapping. Integration in the complex domain – linear integral, Cauchy integral theorem, Cauchy integral formula and formula for derivatives. Power series expansion of general analytic function (Taylor series).Classification of the isolated singularities and definition of Laurent series and residues. Theorem for the residues. Application of residues to evaluation of real integrals.

- Familiarization with classical methods of solving of initial and boundary value problems for partial differential equations with constant coefficients – methods of D' Alembert and Fourier.

- Foundations of the operational calculus – Laplace transform – basic properties and theorems. Applications – solving some classes differential and integral equations.

- Familiarization with the basic ideas of probability theory and mathematical statistics.

PREREQUISITES: Very good training in mathematics from secondary school. Good training in higher mathematics from courses: FBpEE01, FpBEE01 and FBpEE08, FpBEE08

TEACHING METHODS: lectures, seminar work and tutorials.

<u>TEST METHODS AND EVALUATION</u>: Written exam with greater severity of problem-solving skills. INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY:

- 1. Team of IPMI, Higher mathematics, parts IIIandIV, Technika, 1986.
- 2. Team of IPMI, Selected heads from mathematics, Modules I V, Printbase TU Sofia, 1993.
- 3. Team of IPMI, A book of problems of higher mathematics, part IV, Tech-nika, 1979.
- 4. www.tu-plovdiv.bg/research_article.php?article=189

ADDITIONAL BIBLIOGRAPHY:

- 1. Karapenev Hr., Probability theory and mathematical statistics. TU Sofia. 1997.
- 2. Marinov M.S., Analitical functions. Fourier series. Integral transforms, TU-So-fia 1996.
- 3. Prodanova K., Introduction to the statistical methods, Siela1998.
- 4. Mishev D.P., L. I. Karandjulov. Partial differential equations. Integral equations, TU-Sofia, 1997.
- 5. KarandjulovL.I, M.Marinov, M.Slavkova, Short reference to higher mathematics, 2007.

Name of the course	Code: FBpEE18	Semester: 3
Theoretical Electrical Engineering – Part 1		
Type of teaching:	Lessons per week:	Number of credits: 7
Lectures, Seminars, laboratory	L-2 hours; $LW-1$ hours;	
work	Seminars – 2 hour, Self	
	Study – 7 hours	

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: <u>nikola.georgiev@tu-plovdiv.bg</u>

<u>**COURSE STATUS IN THE CURRICULUM**</u>: Compulsory subject in the curriculum for the major of Control systems 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 – part 1 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.

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.

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

<u>ВІВLІОGRAPHY</u>: 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 пловдив, 2008 г.

Name of the course	Code: FBpEE19, FBpEE19	Semester: 3
Technical Safety		
Type of teaching:	Lessons per week:	Number of credits: 4
Lectures, laboratory work	L-2 hours;	
	LW - 1 hour; Self Study $- 4$	

LECTURER:

Assoc. Prof. Dr. . Stanimir Stefanov, e-mail: glasst@abv.bg, тел: 032 659 512;

Asst. Prof. Dr. Ilko Tarpov, e-mail: stsb_plovdiv@abv.bg, TU-Sofia, Branch Plovdiv, Faculty of Electronics and Automation, Department of Electrical Engineering.

<u>COURSE STATUS IN THE CURRICULUM</u>: Compulsory subject for the major of "Automatics, Information and Control Engineering" and "Electrical Engineering", of the Faculty of Electronics and Automation, Bachelor of Science degree.

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.

<u>PREREQUISITES</u>: 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. Генчев М. Кирчев В., Техническа безопасност и екозащита, ISBN 978-954-2937-08-1, ТУ София, филиал Пловдив, 2011
- 2. Вълчев М, Иванов И. Охрана на труда и околната среда. С. Техника, 1984.
- 3. Вълчев М. Охрана на труда. С. Техника 1990.
- 4. Анев Т. и колектив. Вредни въздействия на електричеството и защита от тях С. Техника, 1987.
- 5. Наредба № РД-07-2 от 16 декември 2009 г. за условията и реда за провеждането на периодично обучение и инструктаж на работниците и служителите по правилата за осигуряване на здравословни и безопасни условия на труд, МТСП, Обн. ДВ. бр. 102 от 22.12.2009 г., попр. ДВ. бр. 4 от 15.01.2010 г., изм. ДВ. бр. 25 от 30.03.2010 г.
- 6. Правилник за безопасност и здраве при работа в електрически уредби на електрически и топлофикационни централи и по електрически мрежи, МЕЕР, Обн. ДВ. бр. 34 от 27.10.2004 г., изм. ДВ. бр. 19 от 01.03.2005 г., изм. и доп. ДВ. бр. 92 от 22.10.2013 г.
- Правилник за безопасност и здраве при работа по електрообзавеждането с напрежение до 1000 V, МЕЕР и МТСП, Обн. ДВ. бр. 21 от 11.03.2005 г., изм. ДВ. бр. 17 от 25.02.2011 г., изм. и доп. ДВ. бр. 49 от 04.06.2013 г., изм. ДВ. бр. 73 от 20.08.2013 г.

Name of the course	Code: FBpEE 20	Semester: 3
Semiconductor Electronics		
Type of teaching:	Lessons per week:	Number of credits: 7
Lectures and laboratory work	L – 3 hours; LW – 2	
	hour	

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 AIUT, 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. Electronic amplifiers. Applied scheme with amplifiers

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

<u>BIBLIOGRAPHY</u>: 1. Христов, М.: Полупроводникови елементи, Нови знания, 2007; 2. Дандаров, А. Оптоелектрони пробори 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.

Course Title	Code: FBpEE21	Semester: 3
Economics		
Type of Teaching:	Contact Hours per	Number of credits: 5
	week	
Lectures and Seminars	L-2 hours	
	S - 1 hour	

LECTURERS:

Associate Professor Vladimir Ivanov, PhD, tel.: 032 659-715; vivanov@abv.bg

Chief assistant prof. Desislava Shatarova, PhD, tel. 659 716; e-mail: <u>desislava@tu-plovdiv.bg</u> Sofia Technical University – Branch Plovdiv

<u>COURSE STATUS IN THE SYLLABUS</u>: Compulsory for the students majoring in Automation, Information and Control Engineering at the Faculty of Electronics and Automation, Bachelor's Degree.

<u>COURSE OBJECTIVES</u>: Furthering of studies and practical interpretation of basic economic categories and their expression, interrelation and management in the company.

<u>COURSE DESCRIPTION:</u> Main topics: Introduction into the Economy of the Company; Business environment of the company; Functioning and management of the company; Fixed capital; Assets; Premises and equipment; Staff; Expenditure and cost; Pricing; Sales; Revenues of the company; Efficiency of production activities; Investment and finance of the company; Financial planning.

PREREQUISITES: Basic concepts in Mathematics.

TEACHING METHOD: Lectures and seminar exercises; A multimedia beamer is used in lectures; computers, calculators and written assignments – in seminars.

TESTING AND ASSESSMENT METHODS: ongoing assessment in the form of a written test and practical problems solving, weighing in the final grade as it follows: 60% from the final test result and 40% from the completion of the practical tasks.

LANGUAGE OF INTRUCSTION: Bulgarian.

LITERATURE RECOMMENDED:

1. Маринов, Г., Велев Мл. и др. Икономика на предприемаческата дейност, С. 2003

2. Иванов И. и др. Икономика на предприятието, Варна, изд. на ИУ, 2005

- 3. Николов Н. Икономика на предприятието, С., 1995
- 4. Търговски закон
- 5. Закон за счетоводство
- 6. Закон за ДДС
- 7. Закон за корпоративното подоходно облагане

Course Title	Code: FBpEE22, FpBEE22	Semester: 3
Foreign Languages		
Type of Teaching:	Contact hours per week:	Number of credits: 0
seminars	S - 2 hours	

LECTURERS:	Telephone:	E-mail:
Sen. Lect. Penka Taneva – Kafelova (FME, English)	0895587246	tanneva@gmail.com
Sen. Lect. Nadya Popova (FME, English)	0895587580	<u>popovanadia@yahoo.com</u>
Sen. Lect. Konstantina Nyagolova (FME, English)	0895587577	<u>konstantinanik@yahoo.com</u>
Sen. Lect. Anet Arabadjieva (FME, English)	0892231353	anet2003@abv.bg
Lect. Nadezhda Geshanova (FME, English)	0889314932	<u>nadya_cmf@hotmail.com</u>
Lect. Daniela Valeva (FME, English)	0897899039	daniela.valeva89@gmail.com
Sen. Lect. Mariana Dinkova (FME, German)	0892231373	mdinkova@yahoo.de

<u>COURSE STATUS IN THE SYLLABUS</u>: Compulsory for the students majoring in "Automation, Information and Control Equipment" and "Electrical Engineering" at the Faculty of Electronics and Automation, Bachelor's Degree.

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

<u>COURSE DESCRIPTION</u>: 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 subject.

<u>PREREQUISITES</u>: 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.

<u>METHODS OF TESTING AND EVALUATION</u>: Evaluation is based on continuous assessment and two tests.

LANGUAGE OF INSTRUCTION: English/German LITERATURE RECOMMENDED:

English:

- 1. New Headway English, OUP
- 2. English for Computing, OUP
- 3. English for Electrical Engineering, OUP
- 4. English for Electrical Engineering, Alma Mater International, 2001
- 5. English for Computing, Alma Mater International, 2001

6. *ProFile1 Pre-intermediate, Jon Naunton, Oxford University Press, 2005*

- 7. ProFile2 Intermediate, Jon Naunton, Oxford University Press, 2005
- 8. Business Basics, David Grant and Robert McLarty, Oxford University Press.
- 9. Business Objectives, Vicki Hollett, Oxford
- University Press

10. Business Opportunities, Anna&Terry Phillips, Oxford University Press

11. Business Challenges, Nina O'Driscoll, Fiona Scott-Barret, Longmam

12. Quick Launch into English, Ivan Shotlekov, Penka Taneva, PUPress

- 13. Developing Business Contacts, OUP
- 14. How To Be British, Magazine, John Hoover, 1998
- 15. 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. /Fearns,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 Title Physical Culture	Code: : FBpEE FBE25, FBpIE FBpME22	23, FpBEE23, e30, FBME22,	Semester: 3
Type of Teaching: seminars	Contact hours S – 3hours	per week:	Number of credits: 0
LECTURERS:		Telephone:	E-mail:
Assoc. Prof. ValentinVladimirov-	Theory and	659 646	valdesv2003@yahoo.com

Methodology of PE and Sports Workouts		-
(Methodology of Remedial Exercises); Orienteering		
Sen. Lect.PenkaMeleva - Theory and	659 648	penk1959@abv.bg
Methodology of PE and Sports Workouts		
(Methodology of Remedial Exercises); Swimming		
Sen. Lect.DrDaniel Vladimirov - Theory and	659 646	<u>ludarabota@abv.bg</u>
Methodology of PE and Sports Workouts		
(Methodology of Remedial Exercises); Orienteering		
Sen. Lect.Dr.KrassimirDjaldeti - Theory and	659 648	<u>krsj@abv.bg</u>
Methodology of PE and Sports Workouts		
(Methodology of Remedial Exercises); Athletics		
Lect.Dr,Ptar Doganov Theory and Methodology of	659 648	
PE and Sports Workouts (Methodology of Remedial		
Exercises): Athletics		

<u>COURSE STATUS IN THE SYLLABUS</u>. 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).

<u>COURSEOBJECTIVES</u>: Targeted at further developing of students' physical activities, skills and hygiene habits through effective methods of physical education, improving their mental and physical performance.

<u>COURSEDESCRIPTION</u>: 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.

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

TEACHINGMETHODS: Seminars in accordance with the curriculum in PE and Sport.

<u>METHODSOFTESTINGANDEVALUATION</u>: Evaluation is based on functional tests at the end of semester. Lecturer's signature is required at the end of semester.

LANGUAGEOFINSTRUCTION: Bulgarian and English (only for foreign language students).

LITERATURE RECOMMENDED:

- 1. Владимиров В. Туризъм 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.

Name of the course	Code: BpAICE24	Semester: 4
Control Theory I		
Type of teaching:	Lessons per week:	Number of credits: 5
Lectures and laboratory work	L - 2 hours; $LW - 2$ hour	

LECTURER:

Prof. Ph.D. B. Penev (FEA), Assist. prof. Ph.D V. Petrov Technical University Sofia, Branch Plovdiv, Faculty of Electronics and Automatics (FEA), Control Systems Department

<u>COURSE STATUS IN THE CURRICULUM</u>: Compulsory discipline for regular Bachelor students in the specialty "Automatics, Informatics and Control Engineering" (BAICE) of FEA, Technical University Sofia, Branch Plovdiv.

AIMS AND OBJECTIVES OF THE COURSE: To give the students basic knowledge and skills in analysis and design of continuous linear control systems necessary for the following disciplines in the studying period, in the course and diploma work, as well as in their work as control engineers after graduation.

DESCRIPTION OF THE COURSE: In the course "Control theory I" the students study mathematical models of linear systems by differential equations and transfer functions based on Laplace transformation, main control laws, frequency characteristics of linear systems based on Fourier transformation, algebraic and frequency stability analysis as well as performance specifications of linear systems.

PREREQUISITES: The course uses knowledge from the following disciplines: "Mathematics I, II, III, IV", "Pulse and digital circuits", "Theoretic Electrotechnics I, II", Technical Mechanics", "Physics I, II", "

<u>**TEACHING METHODS</u>**: Lectures including case studies, laboratory work with transactions, team work, private work. In the laboratory the students acquire skills in analysis, design and investigation of linear control systems. The course work includes analysis, design and simulation of a definite linear system using computers with Microsoft Windows, Microsoft Office, MATLAB, SIMULINK and MATLAB TOOLBOXES.</u>

<u>METHOD OF ASSESSMENT:</u> laboratory work transactions (5%) and written examination at the end of 4th semester including a task and two topics from the syllabus (95%).

INSTRUCTION LANGUAGE: Bulgarian

<u>ВІВLІОGRАРНУ</u>: 1. Ищев, К., Теория на автоматичното управление.София, КИНГ, 2000; 2. Наплатанов, Н. и др. Въведение в теорията на управлението. ВМЕИ, С., 1987; 3. Наплатанов, Н., Основи на техническата кибернетика, т.1: Теория на автоматичното регулиране. С., Техника, 1976; 4. Dorf, R.C., Modern Control Systems. Addison-Wesley Publishing Company, 1989; 5. Saadat, H., Computational Aids in Control Systems Using MATLAB. McGraw-Hill, 1993.

Name of the course	Code: BpAICE25	Semester 4
Theoretical Electrical Engineering – Part 2		
Type of teaching: Lectures, Seminars, Laboratory work and Course work	Lessons per week: L – 2 hours; S- 1 hours; LW – 1 hours, Self Study – 4 hours	Number of credits: 5

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: <u>nikola.georgiev@tu-plovdiv.bg</u>,

<u>COURSE STATUS IN THE CURRICULUM</u>: Compulsory subject for students in the speciality Control systems of the Faculty of Electronics and Automation.

<u>AIMS AND OBJECTIVES OF THE COURSE</u>: The subject Theoretical Engineering – part 2 is fundamental that introduces the students in the major of Electrical Engineering to the basic laws and phenomena of electromagnetism, to the approaches to describe the processes in linear and nonlinear electric and magnetic circuits, and to the methods of analyzing these processes in constant, stationary and non-stationary modes. The basic problems of the electromagnetic field are treated.

DESCRIPTION OF THE COURSE: The subject aims at introducing students to the theory and 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.

<u>PREREQUISITES</u>: The course of lectures and laboratory work is based on the students' knowledge of Mathematics, Physics, Programming and Computer Utilization and Theoretical Electrical Engineering – part 1.

TEACHING METHODS: To carry out the laboratory work a guide and patterns of all exercises connected with the research of the behavior of the diagrams studied at the lectures is developed.

METHOD OF ASSESSMENT : Written examination at the end of the forth semester

INSTRUCTION LANGUAGE: Bulgarian

<u>ВІВLІОGRАРНУ:</u> 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, с., 1990. 3.

Name of the course	Code: BpAICE26	Semester: 4
Pulse and digital circuit		
engineering		
Type of teaching:	Lessons per week:	Number of credits: 5
Lectures, laboratory work	L - 2 hours; $LW - 2$ hour	

LECTURERS:

Prof. Ph.D. G. Petrova (FEA), Dept. of Electronics – tel.: 659 576, e-mail: <u>gip@tu-plovdiv.bg</u>, Assoc. Prof. PhD. Ts. Grigorova (FEA), Dept. of Electronics – tel.: 659 721, e-mail: <u>c_gr@tu-plovdiv.bg</u>, Technical University of Sofia, branch Plovdiv

<u>**COURSE STATUS IN THE CURRICULUM**</u>: Compulsory course for the students in B.Sc. program in Automation and control systems.

AIMS AND OBJECTIVES OF THE COURSE: The aim of the course is to provide students with basic knowledge on theoretical and practical aspects of pulse, digital and power circuits and units 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, 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.; Diodes rectifiers, Single-phase and three-phase controlled rectifiers; Voltage-fed transistors inverters – basic characteristics and operation modes;

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

PREREQUISITES: Good fundamental knowledge in the courses: Theoretical Electrotechnic, Semi-conductor electronic devices.

<u>**TEACHING METHODS**</u>: Lectures and laboratory work with protocols containing experimental results.

<u>METHOD OF ASSESSMENT</u>: Two hours written exam at the end of semester with solving practical problems (80%), laboratory works (20%).

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY:

1. Bobcheva M., St. Tabakov, P. Goranov, Power Electronics, Technica press, 2000; 2. Spasov, Gr., D. Petrova, A. Kostadinov. Digital and microprocessor technology. TU-Sofia, 2012, 3. Mihov G., Digital electronics for BSc students in Electronics, Technical University – Sofia press, 1998; 4. Konov K., Pulse and digital circuits with integral TTL elements, I and II part, Technica press, 1988; 5. Storey Neil. Electronics, A System Approach, UK Addison Weslly, 1992, 6. Petrova, G. Ts. Grigorova. Guide laboratory in pulse and digital circuit engineering, TU-Sofia, Branch Plovdiv, 2007

Course title:	Code: BpAICE27	Semester: 4
Electrical measurements		
Type of teaching:	Hours per week:	number of credits: 5
Lectures	L - 2 hours;	
laboratory exercises	LE - 2 hours.	

LECTURER: Associate Professor,PhD **Vania Iordanova Rangelova** Department "Electrical engineering", tel. 032 659 685, cab. 3325, email: <u>vaniarangelova@tu-plovdiv.bg</u>, Technical University of Sofia, Branch Plovdiv

<u>COURSE STATUS IN THE CURRICULUM</u>: The course is mandatory for the students of specialty " *Automation, Information and Control Engineering*" on FEA TU-Sofia, Plovdiv Branch for the academic degree "Bachelor."

<u>PURPOSE OF THE COURSE</u>: 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 prameters and the characteristics of ferromagnetic materials, how to use various types of oscilloscopes.

PREREQUISITES: Electrical Engineering, Physics, Electronics, Control Theory, Elements of Industrial Automation, Computing.

<u>TEACHING METHODS</u>: Lectures, using slides, case studies, laboratory and course work from laboratory manual, work in teams, protocols preparation and defence.

METHOD OF ASSESSMENT: Three hours final exam at the end of 4th semester.

INSTRUCTIONAL LANGUAGE: Bulgarian.

<u>BIBLIOGRAPHY</u>:

- 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

ХАРАКТЕРИСТИКА НА УЧЕБНАТА ДИСЦИПЛИНА

Name of the course:	Code: BAICE28	Semester: 4
Electromechanical devices	BAICE29	
Type of teaching:	Lessons per week:	Number of credits: 5
Lecturers (L),	L- 3hours;	
Laboratory work (LW)	LW- 2hours	
Semester projecs (SP)		

LECTURER: Assoc.Prof.Ph.D. Georgi Ganev, department of Electrical Engineering, tel.:032659534, email: <u>gganev@tu-plovdiv.bg</u>, Technical University of Sofia, Plovdiv branch

<u>COURCE STATUS OF THE CURRICULUM</u>: Compulsory course for students specialty "Automation, Information and Control Engineering" BEng programme at the Faculty of Electronics and Automation of Technical University of Sofia, Plovdiv branch.

<u>AIM AND OBJECT OF THE COURSE</u>: On the completion of the course the students should be able to know the principles of electromechanical power conversion, the construction, principles of operation and characteristics of protection, signal and control electrical apparatuses; to know the construction, principles of operation and characteristics of the transformers, induction, synchronous and DC machines, their applications, mains start-up and speed control methods.

DISCRIPTION OF THE COURSE: The main topics concern: Introduction to the power supply system - generation, transfer, distribution and consumption of electric energy; Construction and operation principles of electrical apparatuses; Electrical apparatuses for control and protection; Single phase transformers - construction and operation principle, main relationships, steady-states behaviors; Induction, synchronous and DC machines constructions, principles of operation, steady-state behaviors and control systems. Micro machines (servomotors, tacho-generators, selsines, etc.) used in the electromechanical systems control.

PREREQUISITES: Mathematics, Physics, Mechanics, Material Science, Electrical Materials, Electrical Engineering Theory, Electrical measurements.

TEACHING METHOD: Lectures with application of demonstrative aids. Laboratory works in teams (3-4 students each). Students should write laboratory report for each laboratory exercise. The semester projects threat the design of different type of electromechanical devices.

METHOD OF ASSESMENT: Written exam at the end of the semester providing 80% of the final score; assessment of the laboratory exercises providing 20% of the final score.

INSTRUCTION LANGUAGE: Bulgarian

<u>ВІВLІОGRАРНY</u>: 1.Божилов Г., Е.Соколов. Електромеханични устройства. Нови знания, С., 2010. 2.Минчева М. Електромеханични устройства. Нови знания, С., 2005. 3.Динов В.,Ст.Шишкова. Електрически машини.ч.1 и ч.2. Пловдив, 2008, 4.Александров А. Електрически апарати, Техника, С., 1999. 5.Тодоров Г., Б.Стоев. Синхронни двигатели с постоянни магнити., С., 2019. 6. Toliyat, Н., G.Kliman. Handbook of electric motors, N.Y.,2004. 7.Ваклев Ил., М.Стоянов, Ръководство за лабораторни упражнения по електромеханични устройства, Техника, С., 1990. 8.Сабинин Ю.А. Электромашинные устройства автоматики, Энергоатомиздат, 1988. 9.Волков Н.И, В.П.Миловзоров, Электромашинные устройства автоматики, Высшая школа, 1986.

Name of the course:	Code: BpAICE30.1	Semester: 4
Industrial management		
Type of teaching:	Lessons per week:	Number of credits: 4
Lectures, Seminar exercises	L - 2, SE-1	

LECTURERS: Associate Professor Toni Mihova, PhD, tel.: 032 659 714, email: <u>expert2009@abv.bg</u>, Sofia Technical University – Plovdiv Branch

<u>COURSE STATUS IN THE CURRICULUM:</u> An optional course for the students, majoring in Automation and control systems, Bachelor degree course.

<u>AIMS AND OBJECTIVES OF THE COURSE</u>: Learning the basics and the current state of the dynamic economic processes in order to enable students with the ability to analyze as a system the ongoing economic processes in the field of Automation and control systems.

<u>COURSE DESCRIPTION</u>: Main topics: Communication in management; Communication process; Management decisions; Style of management; Conflict management; Basic functions of management in industrial enterprises: planning, organisation, motivation and control.

<u>PREREQUISITES</u>: Basic knowledge of Economics, Human resources management, Fundamentals of management and Humanities.

TEACHING METHODS: Lectures and seminars supported by audio, video and multimedia equipment. Active teaching methods, constantly engaging the students, are used.

METHODS OF ASSESSMENT: The level of achieving the goal of the course is monitored by ongoing assessment, expressed in a grade, formed by three components: two control tests with a weight of 0.35 each and evaluation of the performance during the seminars by a factor of 0.30.

LANGUAGE OF INSTRUCTION: Bulgarian

BIBLIOGRAPHY:

Основна литература

- 1. Ангелов, А., Основи на управлението, "Полина комерс", София, 2009
- 2. Иванов, Ив. Основи на мениджмънта, "Макрос", Пловдив, 2003
- Савов, В., Основи на управлението, Университетско издадетелство "Стопанство", София, 1996
- 4. Христов, Ст., Бизнес мениджмънт, Университетско издателство "Стопанство", София, 1998
- 5. Армстронг, М., Преуспяващият мениджър, "Делфин-прес", Бургас, 1993
- 6. Мескон, М., Альберт М., Хедоури, Фр., Основы мениджмънта, "Дело", Москва, 1992
- Донъли, Дж. Х., Гибсън Дж.Л., Иваничевич, Дж.М., Основи на мениджмънта, София, 1997
- 8. Дракър, П., Управление на организации с идеална цел: "Принципи и практика", Фондация "София", София, 1997
- 9. Griffin, R.W., Managementq Texas A&M University, 1996
- 10. Appleby K., Modern Business administration, Fifth Editionq Pitman Publishing, 1991

Допълнителна литература

- 1. Дракър П. Ефективното управление, Класика и стил, С. 2002
- 2. Ташев А. и др. Мениджмънт на човешките ресурси, ТУ София, филиал Пловдив 2004
- Ташев, Гигова, Михова Ръководство за упражнения по МЧР, ТУ София, филиал Пловдив 2007

Name of the course: Management of the small business enterprises	Code: BpAICE 30.2	Semester: IV
Type of teaching:	Lessons per week:	Number of credits: 4
Lectures, Seminar exercises	L - 2, SE-1	

LECTURERS:

Associate Professor Vladimir Ivanov, PhD, tel.: 032 659-715; vivanov@abv.bg

Chief assistant prof. Desislava Shatarova, PhD, tel. 659 716; e-mail: <u>desislava@tu-plovdiv.bg</u>.Sofia Technical University – Branch Plovdiv

<u>**COURSE STATUS IN THE CURRICULUM:**</u> An optional course for the students, majoring in Automation, Information and Control Engineering, Bachelor degree course.

<u>AIMS AND OBJECTIVES OF THE COURSE</u>: students are learning about the possibilities of creating and successfully managing a business in the form of a small company as successful entrepreneurs.

<u>COURSE DESCRIPTION</u>: Main topics: The meaning of a Small Business - Problems and Trends; Small business start-up strategies; Legal forms of doing small business;

Financing of business; How to Write a Business Plan; Marketing; Human resources management and leaving the business.

PREREQUISITES: Basic knowledges in Mathematics and Economics of the enterprise.

TEACHING METHODS: Lectures and seminars supported by audio, video and multimedia equipment. Active teaching methods, constantly engaging the students, are used.

<u>METHODS OF ASSESSMENT</u>: The level of achieving the goal of the course is monitored by ongoing assessment, expressed in a grade, formed by two components: a control tests with a weight of 0.50 and Business plan performance during the seminars by a factor of 0.50.

LANGUAGE OF INSTRUCTION: Bulgarian

BIBLIOGRAPHY:

- 1. Иванов, Владимир, Иванов, Румен Управление на малка фирма учебно помагало, Център по предприемачество към ТУ-София, филиал Пловдив
- 2. Иванов Владимир Ръководство за подготвяне на бизнесплан
- 3. David Stokes Small Business Management DP Publications Ltd 1995
- 4. Маринов, Г. и др. Приложна икономика ИНФОРМА ИНТЕЛЕКТ, С. 1997
- 5. Нанде, Арвин Започнете вашия бизнес, наръчник ПРООН, С., 1998
- 6. Въведение в бизнеса Джанет Кук ФЮТ, 1994
- 7. Старт в бизнеса BARCLAYS BANK PLC, Изд. Къща stn В. Търново 1992
- 8. Азбука на успешния бизнес МОТ Женева, Изд. ВШИОМ "ОКОМ", С., 1993
- 9. Тодоров, К. Стратегическо управление в малките и средните фирми Изд. "НЕКСТ", С., 1997
- 10. Тодоров, К и др. 25 казуса за предприемачи и мениджъри от практиката,
- 11. Тодоров, К и др. 9 бизнесплана за стартиране на собствен бизнес в условията на валутен съвет, Изд. "НЕКСТ", С., 1998
- 12. Кавазаки, Гай Как да побъркате конкурентите си Princeps, С., 1998
- 13. Фентън, Джон Как се продава срещу конкуренцията АПИС, С., 1992
- 14. Електронни ресурси и Интернет.

COURDE DEDURIN HOIN		
Name of the course:	Code: BpAICE30.3	Semester: 4
Marketing		
Type of teaching:	Lessons per week:	Number of credits: 4
Lectures, Seminar exercises	L-2, SE-1	

LECTURERS: Assistant Professor Elena Zlatanova, Ph.D.; e-mail: elyzlatanova@abv.bg

<u>COURSE STATUS IN THE CURRICULUM:</u> An optional course for the students, majoring in "Automation, information and control engineering", Bachelor degree course.

AIMS AND OBJECTIVES OF THE COURSE: To give the students knowledge of the theoretical, organizational, managerial methodological and practical aspects in planning and conducting marketing activities.

<u>**COURSE DESCRIPTION**</u>: Main topics: Marketing basics; Marketing environment; Marketing concepts; Marketing research; Product and product policy; Prices and pricing policy; Segmentation and market positioning; Distribution and logistics; Internet marketing; Advertising; Public relations.

PREREQUISITES: Basic knowledge of economics, sociology, basics of management is required.

TEACHING METHODS: Lectures and seminar exercises, aided by audio, video and multimedia technique. Active methods of teaching, involving the students, are used.

METHODS OF ASSESSMENT: Examination (written).

LANGUAGE OF INSTRUCTION: Bulgarian

BIBLIOGRAPHY:

- 1. Благоев Веселин, Маркетинг, С, InterndtionalUniversity, София 2003
- 2. Бърд Дрейтън, Директен маркетинг, Б, 1993
- 3. Волф Ябок, Маркетинг, С, 1995
- 4. Джефкинс Ф., Въведение в маркетинга, рекл. И Пр, С, 1993
- 5. Доганов Димитър, Рекламата каквато е, Princeps, София, 2000
- 6. Желев Симеон, Маркетингови изследвания, Тракия-М,София, 2002
- 7. Карас Честър, Търговските преговори...,ВТ, 1993
- 8. Кафтанджиев Христо, Хармония в рекламната комуникация, Ciela, София, 2008
- 9. Котлър Филип, Маркетинг 3.0, София, 2010
- 10. Кошник Волфганг, Световен речник по маркетинг и реклама, Б, 1997.
- 11. Льодюк Робер, Мениджмънт на рекламата, С, 1992
- 12. Маринова Елена, Маркетинг, продукт, реклама, В,1992
- 13. Маринова Елена, Маркетингов план, В,1996
- 14. Оксли Харолд, Принципи на пъблик рилейшънс, Б, Делфин прес, 1993
- 15. Прайд У., Маркетинг концепции и стратегии, С, 1994
- 16. Риивс Росър, Реализмът в рекламата, В, 1995
- 17. Стойков Любомир, Фирмена култура и комуникация, УНСС, С, 1995
- 18. Фентън Джон, Как се продава срещу конкуренцията, С, 1992

Course Title:	Code: BpAICE 30.4	Semester: 4
MANAGEMENT		
Type of Teaching:	Contact Hours per week:	Number of
Lectures, Seminars	L - 2 hours, S – 1 hours	credits: 4

LECTURERS:

Prof. Ivan Ivanov, P.h.D. – guest lecturer, tel.:+359 32 261 365, Plovdiv University

<u>COURSE STATUS IN THE SYLLABUS</u>: Optional for students majoring in Automation Engineering at the Faculty of Electronics and Automation, Bachelor's Degree.

<u>COURSE OBJECTIVES</u>: Students acquire basic knowledge of the management process in the organization and the manager's roles and responsibilities.

COURSE DESCRIPTION: Basic topics: Organizations and their internal and external environment – nature and characteristics of the organizations, internal environment of the organization, external environment of the organization; Evolution in the theory and practice of Management – basic schools; The Management process and the work of the manager – basic managerial functions, skills, dilemmas and roles, generalised model of the manager's activity; Managerial decisions – decision-making process, stages of the decision-making process, decision-making methods; Planning – generalised model of the planning process; Organising – nature and contents of the 'organising' function; organizational structures – basic types and characteristics; Motivation –general model of the motivation process; Leadership – basic models of leading, theories and approaches to leading, group leading, types of groups in the organization, group characteristics, conflict management; The Control function – nature, types of control and control requirements, methods of control.

PREREQUISITES: Completed course in Economics.

TEACHING METHOD: Lectures, slides, case studies and model tests.

TESTING AND EVALUATION METHODS: Two one-hour written tests – one mid-term (40%) and one at the end of the semester (40%), and participation in seminars (20%).

LANGUAGE OF INSTRUCTION: Bulgarian

LITERATURE RECOMMENDED:

- 1. Ганчев, П Основи на мениджмънта, София, 2005 г.
- 2. Донъли, Дж. и др., Основи на мениджмънта превод от английски, Отворено общество, с. 1998г.
- 3. Иванов, И. и Г. Георгиев, Основи на мениджмънта, Университетска фондация, Пловдив, 1995г.
- 4. Иванов, И. П. Ганчев, Г. Георгиев, В. Пенчев, П. Пенчев и И. Пенчева, Основи на мениджмънта, Абагар, Велико Търново, 1999 г.
- 5. Иванов, И., Основи на мениджмънта, Макрос 2000, Пловдив, 2003 г.
- 6. A. G. Bedeian, "Management", Louisiana State University, 1993.
- 7. G. A. Cole, "Management, Theory and practice", D.P. Publication, LTD, London, 1993.
- 8. S. P. Robbinson, "Management", Prentice Hall International, Inc, 1994.

Course Title Physical Culture	Code BpEE29, BpAICE31, BP30, FBE33, BpIEe41, FBME29, FBpME29, BAE30, BIM29	Semester: 4
Type of Teaching: seminars	Contact hours per week: S – 3hours	Number of credits: 0

LECTURERS:	Telephone:	E-mail:
Assoc. Prof. ValentinVladimirov– Theory and	659 646	valdesv2003@yahoo.com
Methodology of PE and Sports Workouts		
(Methodology of Remedial Exercises); Orienteering		
Sen. Lect.PenkaMeleva - Theory and	659 648	penk1959@abv.bg
Methodology of PE and Sports Workouts		
(Methodology of Remedial Exercises); Swimming		
Sen. Lect.DrDaniel Vladimirov - Theory and	659 646	ludarabota@abv.bg
Methodology of PE and Sports Workouts		
(Methodology of Remedial Exercises); Orienteering		
Sen. Lect.Dr.KrassimirDjaldeti - Theory and	659 648	<u>krsj@abv.bg</u>
Methodology of PE and Sports Workouts		
(Methodology of Remedial Exercises); Athletics		
Lect.Dr,Ptar Doganov Theory and Methodology of	659 648	
PE and Sports Workouts (Methodology of Remedial		
Exercises); Athletics		

<u>COURSE STATUS IN THE SYLLABUS</u>. 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).

<u>COURSEOBJECTIVES</u>: Targeted at further developing of students' physical activities, skills and hygiene habits through effective methods of physical education, improving their mental and physical performance.

<u>COURSEDESCRIPTION</u>: 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.

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

TEACHINGMETHODS: Seminars in accordance with the curriculum in PE and Sport.

<u>METHODSOFTESTINGANDEVALUATION</u>: Evaluation is based on functional tests at the end of semester. Lecturer's signature is required at the end of semester.

LANGUAGEOFINSTRUCTION: Bulgarian and English (only for foreign language students).

LITERATURE RECOMMENDED:

- 1. Владимиров В. Туризъм 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.