Name of the course: Mathematics I	Code: FBpEE01 FpBEE01	Semester: 1
Type of teaching: Lectures, Seminar exercises.	Lessons per week: L – 3 hours; SU – 3 hours.	Number of credits: 8

LECTURERS: Assis. prof., PhD, Albena Pavlova, Department of mathematics, physics and chemistry ", Tel: 032 659 678, email: <u>akosseva@gmail.com</u>, University of Sofia, Branch Plovdiv.

STATUS OF THE DISCIPLINE IN THE CURRICULUM: Mandatory discipline for specialties:

• "Automation, Information and Control Engineering", • "Electrical engineering"

<u>COURSE OBJECTIVES</u>: Familiarization of students with basic questions in linear and Higher algebra, analytic geometry in the plane and prostrastvoto, the mathematical analysis necessary for application disciplines and subsequent mathematical disciplines.

COURSE DESCRIPTION: Main topics: polynomials, actions with polynomials, of zeros of polynomials. Horner's rule and applications. Rational functions. Decomposition of fractional rational function of the sum of elementary fractions. Determinants – properties and to be somewheree. Minori and adûngirani quantities.Laplace theorem. Matrices, operations with matrices, elementary transformations, rank, inverse matrix, matrix equations. Curves from 2nd degree: circle, ellipse, parabola, Hyperbola. Tangents. Remarkable curves. Surfaces from 2nd degree. Sphere, ellipsoid, hyperboloid, paraboloidi, cone, cylindrical and rotating surfaces. Familiarization of students with basic mathematical analysis questions :Dbackpack, continuity, derivative and a differential of a function, the study of functions and applications. An indefinite integral, definite integral, Newton-Leibniz formula for calculation.Improper integrals.

PREREQUISITES: Good training in mathematics from secondary school.

TEACHING METHODS: Lectures and tutorials.

TEST METHODS AND EVALUATION: Written exam with greater severity of problemsolving skills.

LANGUAGE: Bulgarian.

<u>RECOMMENDED literature:</u> Recommended literature

- 1. Damian C., Stoyanov, calculus I and II part, technique, 1973.
- 2. Damodharan B., Petrov I., Daigle, linear algebra and analytical geometry, Tu-Sofia, 1997.
- 3. Димова В., Стоянов Н., Висша математика I и II част, Техника, 1973.
- 4. Доневски Б., Петров Л., Бижев Г., Линейна алгебра и аналитична геометрия, ТУ-София, 1997.
- 5. Топенчаров В. и колектив, Сборник от задачи по висша математика, част I, II, Техника, 1977.
- 6. Маринов М. и колектив, Задачи за упражнения по висша математика I, II 2006
- 7. Филипова Л. Математика I, ЕТ "Блаком– Благой Благоев" 2012
- 8. Л. Петрушев, Кратък курс по ЛААГ, ТУ-София, 1991.

DESCRIPTION OF THE CLASS

Name of the course: Physics I

Semester:	T	

	Г	Type of teaching			
Education specialty	L	LW	SW	Code	Numbe
	Lectures	Laboratory	Seminar		r of
		work	work		credits
Automation, Information and	2	1	1	FBpEE02	7
Control Systems					
Computer Systems and	2	1	0	FBE03	5
Technologies					
Electronics	2	1	0	FBE03	5
Electrical	2	1	1	BEE02	5
Engineering					

LECTURER: Assoc. Prof. PhD.Iliycho Iliev (Faculty of Mechanical Engineering) – tel.: +35932659673, email: <u>iliev55@abv.bg</u>, Technical University - branch Plovdiv.

<u>COURSE STATUS IN THE CURRICULUM</u>: The class is compulsory for all full-time students of the courses "Automation, Information and Control Systems," "Computer Systems and Technologies," "Electronics" and "Electrical Engineering" in Faculty of Electronics and Automation of TU-Sofia branch Plovdiv from the Bachelor' program of higher education.

AIMS AND OBJECTIVES OF THE CLASS: The aim of the class is to teach scientific knowledge in the field of natural sciences, familiarization with the main laws and terminology of contemporary physics. It must teach experimental and theoretical knowledge and skills with the goal of mastering the main tendencies of scientific progress.

DESCRIPTION OF THE CLASS: The Physics I class and Physics II class are part of a system of compulsory foundation of concepts, laws and principles in physics, which outline the general characteristics of matter on a classical level and the methods needed for their study. The foundation is necessary during further education in specialized disciplines and courses, as well as during professional activity. The presentation and examples are intended to relay knowledge in the following fields: classical mechanics, molecular physics and thermodynamics, electricity and electromagnetism, Light and Optics, Modern Physics. The universal conservation laws are also presented. Suitable physics models are used during the examination of the topics. These models describe the fundamental and applied aspects of physics as clearly and simply as possible.

The modern innovative education requires a considerable expansion of the role of information technology as an effective education tool. The use of information technology during physics education builds a better view of the world and develops personal creativity.

The class uses the International System of Units (SI). The class also introduces and applies universal physics terminology

<u>PREREQUISITES</u>: The class is directly related to physics classes in secondary school as well as elements of mathematical analysis, differential and integral calculation, vector analysis, linear algebra and analytic geometry.

TEACHING METHODS: Lectures, seminar work, and laboratory work which uses individual protection protocols.

METHOD OF ASSESSMENT: Written test during 15th academic week on the subject matter. Test duration – 80 minutes. Lectures (80%), laboratory and seminar work (20%).

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY:

Basic literature

<u>1</u>. И.П.Илиев. Физика (I и II част), Учебник. Издателство "Екс-Прес" Габрово, 2013.

И.П.Илиев. 144 решени задачи по физика. Учебно пособие. Издателство "Екс-Прес" Габрово, 2013.
И.С. Вълков. Е.А.Георджева, И.С.Иванов, <u>И.П.Илиев</u>, Х.П.Карапанов. Лабораторен практикум по

5. И.С. Бълков. Е.А.1 сорджева, И.С.Иванов, <u>И.П.Илиев</u>, А.П.Карапан физика. Учебно пособие. Издателство "Екс-Прес" Габрово, 2013.

Additional literature

1. В.Е. Михайлова. Основи на физиката. SIELA, 2011.

2. А.А. Детлаф, Б.М. Аворский. Курс Физики.Вышая школа, Москва, 1989.

3. Т.И.Трофимова. Курс физики. Вышая школа, Москва, 1989.

4. И.В.Савельев. Курс общей физики, том 1,2 и 3, Наука, Москва, 1986/1988.

5. М.Максимов. Основи на физиката, ч. I и II. Булвест 2000, София, 2000.

Name of the course: Chemistry	Code: FBpEE03	Semester: I
Type of teaching:	Hours for week:	Number of credits: 4
Lectures,	L - 1 hour	
Laboratory work	LW - 1 hour	

LECTURES: Chief ass. PhD Kalina Kamarska tel. 032 659 672, Technical University Sofia, Branch of Plovdiv, Department of Mathematics, Physics and Chemistry.

<u>COURSE STATUS IN THE CURRICULUM</u>: Compulsory subject for full-time students in the curriculum in the major Automation, Information and Control Systems from the bachelor's degree of curriculum.

AIMS AND OBJECTIVES OF THE COURSE: To give basic knowledge about construction materials - metals, their alloys, polymers and other composites, by showing the relationship between the chemical composition, structure and properties. To study general regularities in the electrochemical and chemical conduct of metals in relation to the corrosion problem and its resolve. To provide theoretical and technological knowledge of basic chemical and electrochemical processes used in electronics and electrical engineering.

DESCRIPTION OF THE COURSE: The main chemical and physical properties of metals are discussed. Theoretical knowledge of electrochemical systems – electrode, electrolytic cell and galvanic cell are given. Students learn the theory of electrode potential and electrolysis processes, the kinetics of electric power (primary cells, batteries and fuel cells). An essential part of the course focuses on the mechanisms of corrosion processes and factors affecting their conduct, and the main methods and technologies for corrosion protection. This includes the basic knowledge of polymers - polymerization and polycondensation products, elastomers and inorganic polymers. The chemical composition, structure and properties of composite materials based on them – plastics, rubber composites, technical ceramics and cermets are studied.

PREREQUISITES: The course is based on the knowledge of chemistry from the secondary school.

TEACHING METHODS: Lectures and laboratory works.

METHOD OF ASSESSMENT: Written exam.

INSTRUCTION LANGUAGE: Bulgarian.

BIBLIOGRAPHY:

Main literature:

- 1. Антон Демирев: *Практикум по химия*, Пловдив, Университетско издателство "Паисий Хилендарски", 2014
- 2. Ива Бетова, И. Попова: *Химия*. София, Издателството на Технически университет София, 2010
- 3. Христо Петров, М. Енчева: Химия, София, "Техника", 1994
- 4. Тамара Ганчева и колектив: *Ръководство за лабораторни упражнения по химия*, София, "Наука и изкуство", 1990

Additional literature:

- 1. Иван Панайотов, Стойко Факиров: Химия и физика на полимерите, София, УИ "Свети Климент Охридски", 2005
- 2. Райчо Райчев: Корозия и защита на материалите, София, "Нови знания", 2000 г.
- 3. Иван Ненов: Теоретична електрохимия, София, "Техника", 1991
- 4. Мария Велева, П. Копчев, К. Обрешков: Химия, София, "Наука и изкуство", 1987
- 5. Тамара Ганчева: Структура и свойства на конструкционите полимерни материали, София, "Техника", 1982
- 6. Добри Лазаров: Обща и неорганична химия, София, "Наука и изкуство", 1976

Name of course:	Code:FBpEE04, FpBEE04	Semester: 1
Programming and Computer I - part		
Type of teaching:	Hours per week:	Credits: 6
Lectures	L-2	
Lab. Exercise	LE - 2	
Course work		

LECTURERS:

Ch. Assist. Prof. Dr. Eng. Rumyana Borisova Chukleva, Department "Computer Systems and Technologies" Faculty: Electronics and Automation, tel. +359 32659754; e-mail: <u>r_chukleva@abv.bg</u>

STATUS IN THE CURRICULUM: Compulsory for students in "Automation, Information and Control Engineering" and "Electrical Engineering" of the Faculty of "Electronics and Automation" at the Technical University - Sofia, branch Plovdiv of degree "Bachelor".

OBJECTIVES OF THE COURSE: The goal of the course is students to acquire knowledge and be able to apply the basic concepts of algorithmization, to navigate the composing of standard algorithms, to acquire extensive knowledge in performing engineering calculations with well-known and widespread software tools, to acquire basic knowledge of the composition and the usage of databases for storage and access to information.

DESCRIPTION OF THE COURSE: Main topics: Process of numerical solving of engineering tasks - basic stages. Essence of algorithmization. Algorithm concept. Forms of algorithms - properties. Algorithms presentations. High-level programming language concept. Program, Program Structure. Steps of compilation and program execution. Description of the data. Basic algorithmic structures - presenting them with programming language tools. Linear and Branched Algorithmic Structures and Their Representation. Indulgences. Algorithmic "loop" structure. Functions. Arrays. ink between arrays and pointers. Arithmetic of pointers. Forms and peculiarities of its presentation with means of a high level language. WINDOWS - Operating system with graphical interface. Start menu. Explorer program. Tables, lists, formulas, graphical objects. Spreadsheets - EXCEL program. Functions and formulas. Diagrams and graphics. Data management in EXCEL, Databases and systems for their management. Designing an example database. Manipulating the data in the database.

BACKGROUND: No preliminary training is required beyond basic knowledge of secondary school.

TEACHING METHODS: Lectures and laboratory exercise on subjects of the curriculum, including an execution of certain tasks and tasks for individual work.

METHODS OF ASSESSMENT: The achievement of the set objective of the training course is controlled by **Ongoing assessment** which consists of three components: tests with weight of respectively 0.30 for the first test, 0.40 for the second test, and evaluation of interviews and practical tasks developed during the self-training with weight of 0.30.

LANGUAGE: Bulgarian.

BIBLIOGRAPHY:

1. Sandalski Mincho, Informatics, AVTOSPEKTAR, 2009.

2. Sandalski Mincho, Eve. Dekova, D. Ilieva, Lectures and practical guidance on informatics and information systems and technologies, Auto Spectrum, 2001.

- 3. Simon Harris, James Ross, Fundamentals of algorithms AleksSoft, 2006.
- 4. Stephen Roman, Access Database Design and Programming, Zest Press, 2003.
- 5. Hernandez MH Design of databases SoftPres, 2004.
- 6. Gocheva-Ilieva, Sn., Department for operating systems, PU "P.Hilendarski" 1997.

7. Krushkov Christo Practical Guide to programming in C ++ - Part I Introduction to Programming, PU "P.Hilendarski" 2007.

- 8. Microsoft Excel 2013 Step by Step Microsoft Press.
- 9. Microsoft Word 2013 Step by Step Microsoft Press.

Name of the course	Code: FBpEE05	Semester: 1
Engineering Design Fundamentals – Part I		
Type of teaching: Lectures, Laboratory work,	Lessons per week: L - 1 hour;	Number of credits: 5
Semester Assignment, Self Study	Lw = 2 hours; SS - 5	

LECTURER:

Assoc. Prof. Dr. Pavlina Katsarova, Eng., tel.: (+359 32) 659636, e-mail: p katsarova@abv.bg

Technical University of Sofia, branch Plovdiv

<u>COURSE STATUS IN THE CURRICULUM</u>: Compulsory subject in the curriculum for the major "Automatics, Information and Control Engineering", B.Sc. programme of the Faculty of Electronics and Automatics, Technical University of Sofia, branch Plovdiv.

<u>AIMS AND OBJECTIVES OF THE COURSE</u>: The course of Engineering Design Fundamentals aims at giving the students knowledge and skills necessary for composing fundamental graphic and text documents for the stages of design and the production of electrical engineering ware.

DESCRIPTION OF THE COURSE: Basic topics: Types of constructor's documents. Featuring the fundamental elements of space. Featuring real solids. Dimensioning. Tolerance and fittings. Featuring and marking the typical junctions. Blueprint of a mounted unit. Electrical engineering blueprints. Electrical schemes – types and implementation instructions.

<u>PREREQUISITES</u>: Required knowledge of Mathematics on the basis of which the methods of problem solving from the sphere of the technical documenting are developed.

TEACHING METHODS: Lectures supported by blueprints, slides, boards. Laboratory work. Course work during which particular problems from the sphere of the technical documenting are solved.

METHOD OF ASSESSMENT: Current mark with two written test papers.

INSTRUCTION LANGUAGE: Bulgarian.

<u>ВІВLІОGRАРНУ</u>: 1. Ангелов П., Техническо чертане и стандартизация, С., Техника, 1989; 2. Спиридонов Г., Търновска В., Хубанова В., Лепаров М., Ръководство за упражение по техническо чертане и стандартизация, С., Техника, 1988; 3. Русева Сл. и др. ЕСКД, Справочник по конструкторска документация. Оформяне и изисквания, С., Техника, 1983.

Course Title	Code: FBpEE06, FpBEE06	Semester: 1
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	<u>tanneva@gmail.com</u>
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: FBpEE07, FpBEE07, FBE09, FBpIEe09, FBME08, FBpME08, BIM08, BP08		Semester: 1
Type of Teaching: seminars	Contact hours p S – 3hours	er week:	Number of credits: 0
LECTURERS:		Telephone:	E-mail:
Access Drof ValentinVladiminer	Theory and	650 646	valdagy2002@vahaa aam

Assoc. Prof. valentin vladimirov– Theory and	659 646	valdesv2003@yanoo.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.

PREREQUISITES: 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: Higher Mathematics - II	Code: FpBEE08 FBpEE08	Semester: 2
Type of teaching: Lectures and Seminar work	Lessons per week: L – 3 hours, SW – 2 hours.	Number of credits: 6

LECTURER Assis. prof., PhD, Albena Pavlova, Department of mathematics, physics and chemistry ", Tel: 032 659 678, email: <u>akosseva@gmail.com</u>, University of Sofia, Branch Plovdiv.

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

<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: Ordinary differential equations with separable variables. Basic types first order ODE; Linear differential equations from second and higher order with constant and variable coefficients; Functions of two and more variables – limit of the function, partial derivatives, differential Differentiating of composite and implicit function. Derivatives from second and higher order; Taylor's formula; Extremum of functions of two and more variables; Double, triple, linear integrals and integrals on surface.; Green, Stokes and Gauss formulae; Foundations of the differential geometry (Applications of the mathematical analysis to geometry); Series, function series and Fourier series.

<u>PREREQUISITES</u>: Very good training in mathematics from secondary school. Good training in higher mathematics from course: FpBEE01, FBpEE01.

TEACHING METHODS: lectures, seminar work and tutorials.

METHOD OF ASSESSMENT: Written exam with greater severity of problem-solving skills.

INSTRUCTION LANGUAGE: Bulgarian BIBLIOGRAPHY:

- 1. Team of IPMI, Higher mathematics, parts II and III, Technical, 1986.
- 2. Team of IPMI, Selected heads from mathematics, Modules I V, Printbase TU –Sofia, 1993.
- 3. Team of IPMI, A book of problems on higher mathematics, parts II,III, Technika,1979.

ADDITIONAL BIBLIOGRAPHY:

- 1. Dojchinov D., Mathematical analysis, S. 1994.
- 2. Topencharov V. and team, A book of problems on higher mathematics I and II, Technical, 1977.
- 3. Marinov M. and team, A book of problems on higher mathematics I and II, 2006.
- 4. Karandjulov L I., M. Marinov, M. Slavkova, Short reference on higher mathematics, 2007.

DESCRIPTION OF THE CLASS

Name of the course: Physics II Semester: **2**

		Type of teaching			
Education specialty	L	LW	SW	Code	Number
	Lectures	Laboratory	Seminar		of credits
		work	work		
Automation, Information and	2	1	0	FBpEE09	5
Control Systems					
Computer Systems and	2	1	1	FBE11	5
Technologies					
Electronics	2	1	1	FBE11	5
Electrical	2	1	0	FBEE09	4
Engineering					

LECTURER: Assoc. Prof. PhD.Iliycho Iliev (Faculty of Mechanical Engineering) – tel.: +35932659673, email: <u>iliev55@abv.bg</u>, Technical University - branch Plovdiv.

<u>COURSE STATUS IN THE CURRICULUM</u>: The class is compulsory for all full-time students of the courses "Automation, Information and Control Systems," "Computer Systems and Technologies," "Electronics" and "Electrical Engineering" in Faculty of Electronics and Automation of TU-Sofia branch Plovdiv from the Bachelor' program of higher education.

<u>AIMS AND OBJECTIVES OF THE CLASS</u>: The aim of the class is to teach scientific knowledge in the field of natural sciences, familiarization with the main laws and terminology of contemporary physics. It must teach experimental and theoretical knowledge and skills with the goal of mastering the main tendencies of scientific progress.

DESCRIPTION OF THE CLASS: The Physics I class and Physics II class are part of a system of compulsory foundation of concepts, laws and principles in physics, which outline the general characteristics of matter on a classical level and the methods needed for their study. The foundation is necessary during further education in specialized disciplines and courses, as well as during professional activity. The presentation and examples are intended to relay knowledge in the following fields: classical mechanics, molecular physics and thermodynamics, electricity and electromagnetism, Light and Optics, Modern Physics. The universal conservation laws are also presented. Suitable physics models are used during the examination of the topics. These models describe the fundamental and applied aspects of physics as clearly and simply as possible.

The modern innovative education requires a considerable expansion of the role of information technology as an effective education tool. The use of information technology during physics education builds a better view of the world and develops personal creativity.

The class uses the International System of Units (SI). The class also introduces and applies universal physics terminology

<u>PREREQUISITES</u>: The class is directly related to physics classes in secondary school as well as elements of mathematical analysis, differential and integral calculation, vector analysis, linear algebra and analytic geometry.

TEACHING METHODS: Lectures, seminar work, and laboratory work which uses individual protection protocols.

METHOD OF ASSESSMENT: Written test during 15th academic week on the subject matter. Test duration – 80 minutes. Lectures (80%), laboratory and seminar work (20%).

INSTRUCTION LANGUAGE: Bulgarian

<u>BIBLIOGRAPHY:</u>

Basic literature

_1. И.П.Илиев. Физика (І и ІІ част), Учебник. Издателство "Екс-Прес" Габрово, 2013.

2. И.П.Илиев. 144 решени задачи по физика. Учебно пособие. Издателство "Екс-Прес" Габрово, 2013.

3. И.С. Вълков. Е.А.Георджева, И.С.Иванов, <u>И.П.Илиев</u>, Х.П.Карапанов. Лабораторен практикум по физика. Учебно пособие. Издателство "Екс-Прес" Габрово, 2013.

Additional literature

1. В.Е. Михайлова. Основи на физиката. SIELA, 2011.

2. А.А. Детлаф, Б.М. Аворский. Курс Физики.Вышая школа, Москва, 1989.

3. Т.И.Трофимова. Курс физики. Вышая школа, Москва, 1989.

4. И.В.Савельев. Курс общей физики, том 1,2 и 3, Наука, Москва, 1986/1988.

5. М.Максимов. Основи на физиката, ч. I и II. Булвест 2000, София, 2000.

COURSE DESCRIPTION

Name of the course	Code: FBpEE10	Semester 2
Material science		
Type of teaching:	Lessons per week:	Number of credits: 4
Lectures and laboratory work	L-2 hours; $LW-1$ hours,	
	Self Study – 4 hours	

LECTURER: Assoc. Prof., PhD. Marin GenchevGenchev, тел: 032 659 512;

Asst. Prof. Dr. IlkoTarpov, 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 students in the speciality Automation, Information and Control Systems of the Faculty of Electronics and Automation.

<u>AIMS AND OBJECTIVES OF THE COURSE</u>: The purpose of the course is to introduce students to the major properties and features that determine in a quantity manner these properties for electrical insulation, conductive, semi-conductive and magnetic materials, as well as their application in electrical engineering.

DESCRIPTION OF THE COURSE: The subject Electrical Engineering Materials presents the behavior of the various types electrical engineering materials in the electrical and magnetic field and the processes taking place within them.

PREREOUISITES: The subject is based on knowledge of Physics, Chemistry and Mathematics.

TEACHING METHODS: Lectures. Laboratory work is carried out using a lab guide and reports worked out by students and defended before the lecturer at classes.

METHOD OF ASSESSMENT: Written examination at the end of the 2 semester.

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY:

1. Генчев М., *"ЕЛЕКТРОТЕХНИЧЕСКИ МАТЕРИАЛИ*", електронен учебник, ISBN 978-954-2937-07-4, e-book, http://elrn.tu-plovdiv.bg/microsoftclasserver, 2010

2. Генчев М. "*ЕЛЕКТРОМАТЕРИАЛОЗНАНИЕ*", учебник, ISBN 978-954-8779-99-9, Дъга принт ООД, Пловдив, 2011

3. Генчев М. "РЪКОВОДСТВО ЗА ЛАБОРАТОРНИ УПРАЖНЕНИЯ ПО

ЕЛЕКТРОМАТЕРИАЛОЗНАНИЕ ", ISBN 978-954-8779-98-2, Дъга принт ООД, Пловдив, 2011 **4.Тодорова А., Г.Дюстабанов, М.Генчев**, "*РЪКОВОДСТВО ПО МАТЕРИАЛОЗНАНИЕ* ", ISBN 954-438-102-3, Издателство на ТУ София, 1994

5. Генчев М., "*РЪКОВОДСТВО ЗА ЛАБОРАТОРНИ УПРАЖНЕНИЯ ПО ЕЛЕКТРОТЕХНИЧЕСКИ МАТЕРИАЛИ*", електронен учебник, ISBN 978-954-2937-06-7, e-book, http://elrn.tu-plovdiv.bg/microsoftclasserver, 2009

COURSE DESCRIPTION

Name of the course: "Mechanics"	Code: FBpEE11	Semester: II
Type of teaching: Lectures, Seminar exercises.	Lessons per week: $L - 2$, $SE - 2$	Number of credits: 6

LECTURERS:

Associate Professor Zlatko Zlatanov, PhD, tel.: 659 634, email: <u>zlatanov@tu-plovdiv.bg</u> Sofia Technical University – Plovdiv Branch

<u>COURSE STATUS IN THE CURRICULUM</u>: A compulsory course for students, majoring in Automation and control techniques and Electrical engineering, Bachelor degree course.

<u>AIMS AND OBJECTIVES OF THE COURSE</u>: The main objective of the course "Mechanics" is to expand and develop the knowledge, obtained from the courses of Physics and Material science in the field of engineering mechanics, the theory of mechanisms and machines, the elements of the equipment and machines, based on the engineering background. Along with the acquisition of basic knowledge the course aims at adoption and implementation by the students of engineering methods for solving a wide range of technical tasks. Based on the knowledge obtained in this course the students will be able to conduct effective professional dialogue with representatives from engineering, mechanical and manufacturing disciplines.

COURSE DESCRIPTION: Main topics: Statics: reduction and balance of systems of forces. Strength of Materials: Stress and strain, geometric moments of inertia, simple resistance. Kinematics: Kinematics of a point, kinematics of rigid body motion. Dynamics: basic tasks, oscillations of a material point, rigid body motion, differential equations.

PREREQUISITES: Knowledge of Calculus, Physics, and Material science needed.

TEACHING METHOD: Lectures, seminar exercises.

METHODS OF ASSESSMENT: Written examination at the end of the second semester. **LANGUAGE OF INSTRUCTION:** Bulgarian

BIBLIOGRAPHY:

1. Писарев А., Ц. Парасков, С. Бъчваров, Курс по теоретична механика - I и II част, ДИ "Техника", 1988.

2. Николов Н. Съпротивление на материалите, София, 2013.

3. Кисьов И., Съпротивление на материалите, С., 1981.

4. Недев Ц., Н.Игнатов, А.Лилов, Техническа механика, С., 1984.

5. Бъчваров С., А. Джонджоров, Б. Чешанков, Н. Малинов, Методично ръководство за решаване на задачи по теоретична механика - І и ІІ част, ДИ "Техника", 1992..

6. Мандичев Г. и др., Сборник от задачи и методически указания по съпротивление на материалите, София, 1993.

Name of the course: Programming and use of computers II	Code: FBpEE12	Semester: 2
Type of teaching: Lectures Laboratory exercises Course paper	Lessons per week: Л - 2 ЛУ - 1	Number of credits: 5

LECTURER: Associate Professor Dilyana Budakova, PhD, Sofia Technical University, Plovdiv Branch

COURSE STATUS IN THE CURRICULUM: a compulsory course for the students, majoring in Electrical Engineering and Automatics at Sofia Technical University, Plovdiv Branch, Bachelor's degree.

<u>AIMS AND OBJECTIVES OF THE COURSE</u>: The students to learn and be able to apply the approaches, methods and the technical means, as well as the basic principles of the structural approach in programming and, in accordance with their needs and interests, to acquire new knowledge and possibilities in this subject area.

After completing the course the students are expected to: know the principles of operation of the pre-processor and its possibilities for adaptation of the programming code; be able to create, maintain and process binary and text files; know the principles for creation and use of new types in C language; have knowledge of programming at a lower level – work with individual bites; know the principles of work with data structures for realization of basic algorithms in programming.

COURSE DESCRIPTION: Some of the main topics are: Extended work with functions; functions; Address pointers; Memory classes; Pointers to functions; Distribution of the address space in a single-programme mode; Dynamic memory allocation; System means of dynamic memory allocation; Dynamic one-dimensional arrays, arrays of pointers; Recursion; Nature, use, examples; Recursion and iteration; Input/output operations; Classification and properties of the input/output devices; Additional data for files description and processing; Text and binary files; Pre-processor in C; Inclusion of files; Macros with arguments; Conditional compilation; Low-level programming; Bit-by-bit operations; Nature, purpose, use, examples; Bit fields; Data structures; Definition; Structure and organization of work with data: functional specifics, logical description and physical representation; Types of classifications; Static data structures; Structures in C language; Complex and nested structures; Relationship with pointers and arrays; List; Stack; Tail; Deck; Static conversion; Dynamic realization; Basic operations: element inclusion, traversal, element deletion; Trees; Definition and spheres of application; Binary tree; Conversion of an arbitrary tree into a binary one; Algorithms for processing binary trees: search by a given key; inclusion of a new vertex, exclusion of a vertex by a given key, traversal; Graphs; Basic notions; Representation and simple operations with a graph; Graph traversal; Traversal algorithms; Sorting; Sorting by direct insertion; Sorting by direct selection; Sorting by direct exchange (bubble sort); Sorting by branches (quick sort by Hoare); Search; Consecutive search; Binary search; String processing; String length; String comparison; Algorithms for search in a string - algorithm with forced relocation and algorithm Knuth-Morris-Pratt (finite automata).

PREREQUISITES: Knowledge of structural programming and C language at the level of Programming and use of computers I.

TEACHING METHODS: Lectures, laboratory exercises on the basic topics, project topic on choice.

<u>METHODS OF ASSESSMENT</u>: ongoing assessment, based on two written tests – the first one with a coefficient of weight 0.5, and the second with a coefficient of weight 0.4, plus a course paper with a coefficient of weight 0.1. LANGUAGE OF INSTRUCTION: Bulgarian

BIBLIOGRAPHY:

- 1. Sedgewick, Robert, Algorithms in C, SoftPress, 2002.
- 2. Nakov, P., P. Dobrikov, Programming =++Algorithms, Top Team Co, Sofia, 2002.
- 3. Nakov, P., Basics of computer algorithms, Top Team Co, Sofia, 1998.
- 4. Wirth, Niklaus, Algorithms + data structures = programmes, Techniques Publishing, Sofia, 1980.
- 5. Kernighan B., D. Ritchie, Programming language C, Prentice Hall, 2002.
- 6. Momchev, I., K. Chakarov, Programming III (C and C++), TU Sofia, 2000.
- 7. Schildt, Herbert, Practical Tutorial, The most successful method of studying C, Softpress, 2001.
- 8. Kelly Al, Ira Pohl. A book on C, Addison Wesley, 2002.
- 9. Hanly, J., E. Koffman, F. Friedman. Problem Solving and Problem Design in C. Addison-Wesley, 1993.

Name of the course	Code: FBpEE13	Semester: 2
Engineering Design Fundamentals – Part II		
Type of teaching: Lectures, Laboratory work, Self Study	Lessons per week: L – 1 hour; LW – 1 hour; SS - 3	Number of credits: 3

LECTURER:

Assoc. Prof. Dr. Pavlina Katsarova, Eng., tel.: (+359 32) 659636, e-mail: <u>p_katsarova@abv.bg</u> Technical University of Sofia, branch Plovdiv

<u>COURSE STATUS IN THE CURRICULUM</u>: Compulsory subject in the curriculum for the major "Automatics, Information and Control Engineering", B.Sc. programme of the Faculty of Electronics and Automatics, Technical University of Sofia, branch Plovdiv.

<u>AIMS AND OBJECTIVES OF THE COURSE</u>: The course of Engineering Design Fundamentals aims at giving the students knowledge and skills necessary for composing fundamental graphic and text documents for the stages of design and the production of electrical engineering ware.

DESCRIPTION OF THE COURSE: Basic topics: Types of constructor's documents. Featuring the fundamental elements of space. Featuring real solids. Dimensioning. Tolerance and fittings. Featuring and marking the typical junctions. Blueprint of a mounted unit. Electrical engineering blueprints. Electrical schemes – types and implementation instructions.

<u>PREREQUISITES</u>: Required knowledge of Mathematics on the basis of which the methods of problem solving from the sphere of the technical documenting are developed.

TEACHING METHODS: Lectures supported by blueprints, slides, boards. Laboratory work during which particular problems from the sphere of the technical documenting are solved.

METHOD OF ASSESSMENT: Current mark with two written test papers.

INSTRUCTION LANGUAGE: Bulgarian.

<u>ВІВLІОGRАРНУ</u>: 1. Ангелов П., Техническо чертане и стандартизация, С., Техника, 1989; 2. Спиридонов Г., Търновска В., Хубанова В., Лепаров М., Ръководство за упражение по техническо чертане и стандартизация, С., Техника, 1988; 3. Русева Сл. и др. ЕСКД, Справочник по конструкторска документация. Оформяне и изисквания, С., Техника, 1983.

Course title:	code: FBpEE14	Semester: 2
Technological practicum		
Type of teaching:	Lessons per week:	Number of credits: 1
Seminars,	S - 1 hours	
Laboratory Works and	LW - 2 hours	
Self Study	SS - 2 hours	

LECTURER:

Assoc.Prof. Nikola Shakev, PhD, phone (032) 659 528, <u>shakev@tu-plovdiv.bg</u>, Technical University of Sofia- branch Plovdiv, Faculty of Electronics and Automation.

Assist. Prof. Ivan Hadzhiev, Ph.D., phone (032) 659 686, e-mail: <u>hadzhiev_tu@abv.bg</u>, Technical University of Sofia - branch Plovdiv, Faculty of Electronics and Automation.

<u>COURSE STATUS IN THE CURRICULUM</u>: Compulsory subject for full-time students of specialties "Automation, Information and Control Systems" and "Electrical Engineering" at FEA of TU-Sofia, Plovdiv Branch, Bachelor's degree.

AIMS AND OBJECTIVES OF THE COURSE: The students have to achieve a practical knowledge and basic concepts about technological environment of electrical engineering, automation, information and control systems. The students have to reach a general and specific technological processes and methods, used in modern electrical and control industry. The practical exercises have to form visual and sense perception about used materials, electronic and electromechanical elements, electrical equipment, machines and technologies.

DESCRIPTION OF THE COURSE: The students get knowledge about some technological processes in manufacturing of electrical equipment, control systems and electronics. Some typical applications of electrical and control equipment in industrial technological processes are discussed. Students get experience in usage of electric devices, technical documentation, electric equipment and tools.

<u>PREREQUISITES</u>: Required knowledge of Physics, Chemistry, Materials Science, Technical Documenting.

TEACHING METHODS: seminars, laboratory work, visits in industrial plants.

METHOD OF ASSESSMENT: Certification of a completed course of laboratory works is required.

INSTRUCTION LANGUAGE: Bulgarian.

BIBLIOGRAPHY:

- 1. Динев П. Технологичен практикум. С., 2002.
- 2. Динев П. и колектив, Ръководство по технологичен практикум. С., 2004.
- 3. Видеков В. и колектив, Ръководство за семинарни упражнения по технологичен практикум. С., 2006.
- 4. W. Durfee, Arduino Microcontroller Guide, University of Minnesota, 2011.
- 5. Масларов И., Шопов Й. Технологии в електротехниката и електрониката. С., 2005.
- 6. Русев Д., Матраков Б. Туренков В. Електрически измервания, Техника 2006.
- 7. Николов Е., Технически средства за автоматизация, С., ТУ, 2003 г.

Course Title	Code: FBpEE15, FpBEE15	Semester: 2
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: FBpEE16, FpBEE16, FBE18, FBpIEe20, FBME15, FBpME15		Semester: 2
Type of Teaching:	Contact hours per	week:	Number of credits: 0
seminars	S – 3hours		
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.

METHODSOFTESTINGANDEVALUATION: 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.