DESCRIPTION OF THE COURSE

Name of the course: **Mathematics I**	Code: **MAT12**	Semester: **1**
Type of teaching: Lectures (L) Tutorials (T)	Hours per semester: L – 30 hours LW – 30 hours	Number of credits: **7**

LECTURER(S):
Assoc. Prof. Albena Pavlova, PhD (FME), tel.: 032 659 652, e-mail: albena_pavlova@tu-plovdiv.bg
Assist. Prof. Iva Naidenova, PhD (FME), tel.: 032 659 651, e-mail: iva.naydenova@tu-plovdiv.bg
Assist. Prof. Radka Koleva, PhD (FME), tel.: 032 659 651, e-mail: rkoleva@tu-plovdiv.bg
Technical University of Sofia

COURSE STATUS IN THE CURRICULUM: Compulsory subject from the curricula for training of students to obtain Bachelor's degree, specialties Mechanical Engineering and Instrumentation, Mechatronics, Computer Modelling and Mechanical Engineering, Professional orientation 5.1 Mechanical engineering; specialties Transport Machinery and Technology, Aeronautical Engineering, Professional orientation 5.5 Transport, Navigation and Aviation, specialties Industrial Management, Graphic Design and Printing, Professional orientation 5.13 General Engineering, Field 5 Technical Sciences.

AIMS AND OBJECTIVES OF THE COURSE: Familiarization the students with basic parts of the Linear algebra, Analytic geometry, Mathematical analysis and neighbour mathematical disciplines necessary for application disciplines.

DESCRIPTION OF THE COURSE: The main topics concern: *Linear algebra* – Polynomials, Zeros of polynomials, Determinants, Matrices, Matrix equations, Systems of linear equations; *Analytic geometry* – Vectors, Coordinate systems, Equations of Lines and Planes, Conic Sections, general concepts of Surfaces and Surfaces of second order; *Mathematical analysis* – Numerical Sequences, Limits of Numerical Sequences, Limits and Continuity of Functions, Derivative of a Function of a Real Variable, Differential of a Function of One Variable.

PREREQUISITES: Very good training in mathematics from secondary school.

TEACHING METHODS: Lectures and tutorials.

METHOD OF ASSESSMENT: Written examination with more weight skills to solve problems.

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY:
1. Апостолова М., Лекции по линейна алгебра и аналитична геометрия, София 1993, 2. Димова В., Стянов Н., Висша математика II част, Техника, 1973, 3. Дойчинов Д., Математически анализ, Наука и изкуство, 1990, 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, части I и II, Техника, 1977, 6. Маринов М. и колектив, Задачи за упражнения по висша математика, части I и II, 2006, 7. Колектив при ИПМИ, Линейна алгебра и аналитична геометрия, Математичен анализ I част, Модули, Печатна база ТУ–София,1992, 8. Каранджулов Л., Маринов М., Славкова М., Кратък справочник по висша математика, 2007.

DESCRIPTION OF THE COURSE

Name of the course: **Physics**	Code: **PHY01**	Semester: **1**
Type of teaching: Lectures (L) Laboratory work (LW)/Tutorials (T)	Hours per semester: L – 45 hours T – 15 hours LW – 30 hours	Number of credits: **7**

LECTURER(S):
Assis. prof. Georgi Dobrev, PhD (FME), tel.: 032659654, e-mail: dobrevbg@tu-plovdiv.bg
Assis. Zara Kasapeteva, PhD (FME), tel.:032659654, e-mail: zara_kasapeteva@tu-plovdiv.bg
Technical University of Sofia

COURSE STATUS IN THE CURRICULUM: Compulsory subject from the curricula for training of students to obtain Bachelor's degree, specialties Mechanical Engineering and Instrumentation, Mechatronics, Computer Modelling and Mechanical Engineering, Professional orientation 5.1 Mechanical engineering; specialties Transport Machinery and Technology, Aeronautical Engineering, Professional orientation 5.5 Transport, Navigation and Aviation, specialties Industrial Management, Graphic Design and Printing, Professional orientation 5.13 General Engineering, Field 5 Technical Sciences.

AIMS AND OBJECTIVES OF THE COURSE: The aim of the course of Physics is to acquaint the students with the physical phenomena and processes, the methods of their studying and the possibilities for their technical application. The obtained theoretical knowledge and practical skills are a prerequisite for development and formation of independent thinking and ability to solve a variety of real physical problems.

DESCRIPTION OF THE COURSE: The main topics concern: Basic physical laws and values, describing the most general properties of matter from the point of view of classical mechanics. The content of the course is organized in the following chapters: Mechanics, Molecular physics, Thermodynamics, Electrostatics, Electric current, Electromagnetism, Vibrations, Waves in an elastic medium, Acoustics, Geometric and wave optics, Quantum properties of matter, Atomic physics. The main physical laws are considered by means of using classical models, allowing for accurate description of real processes. Computer technique along with information technologies are used where needed in combination with appropriate measurement devices. The use of the international measurement system SI is indispensable and compulsory part of the course. The basic knowledge given by this course is further needed both for the specialized courses and for the professional preparation of the students.

PREREQUISITES: Prerequisites for successful mastering the material in the course of Physics - are good knowledge of the material in Physics and Mathematics form secondary school and certain elements from the courses in Mathematics (Calculus).

TEACHING METHODS: Lectures for acquaintance with the theoretical material, laboratory work for obtaining practical skills, as well as for systematization and processing of the measurement results. The seminary exercises help to apply theoretical knowledge to solve specific tasks (only for students majoring in Mechatronics).

METHOD OF ASSESSMENT: Written examination (test), complex assessment made up of 80% from the test result and 20% from the performance during laboratory work and seminar exercises.

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY: 1.И.П. Илиев. Физика (I и II част). Издателство „Екс-прес“, 2018; 2. И.П. Илиев. 144 решени задачи по физика. Издателство „Екс-прес“, 2018; 3. И.Вълков, Е.Георджева, И.Иванов, Ил. Илиев, Хр. Карапанов. “Лабораторен практикум по физика. “Екс-Прес”, 2017; 4. Т.Трофимова. Курс по физика. Изд. На СУ“Кл.Охридски” 1995; 5. М.Максимов. Основи на физиката. Част 1,2 София 2000; 6. С.Дамянов. Сборник от задачи по физика.Изд.“Наука и изкуство“ София 1987; 7. Савалев И.В “Курс по обща физика” I,II,III т. изд. “Наука”, Москва 1973 г.; 8. С.Йорданов, Физика 1, ЕКС-ПРЕС,2006; 9. И.Вълков, Физика в “Задачи I”, “Макрос” Пловдив, 2012; 10. Д.Христозов и др., Лабораторен практикум по физика, изд. Наука и изкуство, 1990 11. Н.Илков, С.Николов, Физика част 1, София, 2003.

DESCRIPTION OF THE COURSE

Name of the course: **Chemistry**	Code: **CHE01**	Semester: **1**
Type of teaching: Lectures (L) Laboratory work (LW)	Hours per semester: L – 30 hours LW – 15 hours	Number of credits: **5**

LECTURER(S):
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Technical University of Sofia

COURSE STATUS IN THE CURRICULUM: Compulsory subject from the curricula for training of students to obtain Bachelor's degree, specialties Mechanical Engineering and Instrumentation, Mechatronics, Computer Modelling and Mechanical Engineering, Professional orientation 5.1 Mechanical engineering; specialties Transport Machinery and Technology, Aeronautical Engineering, Professional orientation 5.5 Transport, Navigation and Aviation, specialties Industrial Management, Graphic Design and Printing, Professional orientation 5.13 General Engineering, Field 5 Technical Sciences.

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.

DESCRIPTION OF THE COURSE: The main topics concern: 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 electrode reactions, and electrode over potential. Presented are the modern electrochemical sources 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 knowledge of chemistry from the secondary school.

TEACHING METHODS: Lectures and laboratory works with protocols.

METHOD OF ASSESSMENT: Two assessments at mid and end of semester.

INSTRUCTION LANGUAGE: Bulgarian/English

BIBLIOGRAPHY:
1. Демирев А. Практикум по химия. УИ П. Хилендарски, Пловдив, 2014; 2. Бетова И., И. Попова. Химия. ТУ - София, София, 2010; 3. Панайотов И., С. Факиров. Химия и физика на полимерите. УИ Св. Климент Охридски, София, 2005; 4. Райчев Р. Корозия и защита на материалите. Нови знания, София, 2000; 5. Петров Х., М. Енчева. Химия. Техника, София, 1994; 6. Ненов И. Теоретична електрохимия. Техника, София, 1991; 7. Ганчева Т., Е. Добрева., И. Яначкова. Ръководство за лабораторни упражнения по химия. Наука и изкуство, София, 1990; 8. Велева М., П. Копчев, К. Обрешков. Химия. Наука и изкуство, София, 1987; 9. Ганчева Т. Структура и свойства на конструкционите полимерни материали. Техника, София, 1982.

DESCRIPTION OF THE COURSE

Name of the course: **Information and communication technologies**	Code: **CCE23**	Semester: **1**
Type of teaching: Lectures (L) Laboratory work (LW) Course work (CW)	Hours per semester: L – 30 hours LW – 45 hours	Number of credits: **8**

LECTURER(S):

Assoc. Prof. Dilyana Budakova, PhD, tel: 0878281616, e-mail:
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Assist. Prof. Veselka Dimitrova, PhD, tel.: 659 754, e-mail:vpetrova@tu-plovdiv.bg
Assist.Velyo Vasilev, tel.: 659 754, e-mail: velyo.vasilev@tu-plovdiv.bg
Technical University of Sofia

COURSE STATUS IN THE CURRICULUM: Compulsory subject from the curricula for training of students to obtain Bachelor's degree, specialties Mechanical Engineering and Instrumentation, Mechatronics, Computer Modelling and Mechanical Engineering, Professional orientation 5.1 Mechanical engineering; specialties Transport Machinery and Technology, Aeronautical Engineering, Professional orientation 5.5 Transport, Navigation and Aviation, specialties Industrial Management, Graphic Design and Printing, Professional orientation 5.13 General Engineering, Field 5 Technical Sciences.

AIMS AND OBJECTIVES OF THE COURSE: The course aims to study the theoretical foundations and be able to apply modern concepts and trends in the development of telecommunications, be able to solve problems with the help of a computer; be able to analyze and design information systems and databases; to program with a high-level procedural language (ISO C); have skills in using cloud services and social networks.

DESCRIPTION OF THE COURSE: The main topics concern: Introduction to Information and Communication Technologies (ICT). Telecommunication networks. Modems. Modulation. Multiplexing. Wired and wireless communication. The electromagnetic spectrum is a resource. Bandwidth. Communication channel. Cellular communications. Multiple access techniques. Data centres. Optical cables. Parallel and serial data transmission. Presentation and storage of information in the computer, coding of information, ASCII code, Unicode, UTF-8, symbolic and numerical data, number systems, binary number system. DRAM, CPU, GPU. Solve problems with the help of a computer. Program structure of C programming language. Standard input/output. Cycle operators. Conditional operators. Arrays. Functions. Compound data types. Information systems (IS). Introduction to the design of relational databases. DBMS. Analysis of a ready database. Introduction to SQL-Structured Query Language.

PREREQUISITES: Knowledge of mathematics and computer science from the high school.

TEACHING METHODS: Lectures, laboratory exercises, and course work on the basic topics.

METHOD OF ASSESSMENT: Exam. The assessment is formed by the results of two tests and the assessment of the coursework. Both control and coursework have a weighting factor of 0.1, and the exam grade has a weighting factor of 0.7.

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY: Principles of Electronic Communication Systems, Louis E., Frenzel Jr., **Fourth Edition,** Published by **McGraw-Hill Education**, New York, **2016**, ISBN 978-0-07-

337385-0. **2.** Database Management Systems, G.K.Gupta, **McGraw-Hill Education**, **2018**, ISBN10: 9789353161408**. 3.** Fundamentals of wireless communication engineering technology, K. Daniel Wong, Series on information and communication technology, **Wiley**, **2012**. 4.Kendall K., Kendall J., Systems Analysis and Design, Eighth Edition, **Prentice Hall**, 2011. 5. G Mobile and Wireless Communications Technology, Afif Osseiran, Jose F. Monserrat, Patrick Marsch, **Cambridge university press**, **2016**. 6. Хърбърт Шилдт, Практически самоучител, Най-успешният и доказан метод за научаване на C, **Софтпрес**, 2001.

DESCRIPTION OF THE COURSE

Name of the course: **Foreign Language I**	Code: **LNG01**	Semester: **1**
Type of teaching: Tutorials (T)	Hours per semester: T – 30 hours	Number of credits: **2**

LECTURER(S):

Sen. Lect. Konstantina Nyagolova (FME, English)	0887276513	konstantinanik@yahoo.com
Sen. Lect. Nadya Popova (FME, English)	659 707	popovanadia@yahoo.com
Sen. Lect. Anet Arabadjieva (FME, English)	0892231353	anet2003@abv.bg
Sen. Lect. Nadezhda Geshanova (FME, English)	0889314932	geshanova@tu-plovdiv.bg
Sen. Lect. Dr Daniela Valeva (FME, English)	0897899039	daniela.valeva89@gmail.com

Technical University of Sofia

COURSE STATUS IN THE CURRICULUM: Compulsory subject from the curricula for training of students to obtain Bachelor's degree, specialties Mechanical Engineering and Instrumentation, Mechatronics, Computer Modelling and Mechanical Engineering, Professional orientation 5.1 Mechanical engineering; specialties Transport Machinery and Technology, Aeronautical Engineering, Professional orientation 5.5 Transport, Navigation and Aviation, specialties Industrial Management, Graphic Design and Printing, Professional orientation 5.13 General Engineering, Field 5 Technical Sciences.

AIMS AND OBJECTIVES OF THE COURSE: The course is targeted at further developing of students' language knowledge and practical skills in their specific professional field.

DESCRIPTION OF THE COURSE: The main topics concern: The course is taught at language levels determined through placement tests, based on the principal foreign language studied at secondary school. No absolute beginner groups are formed. The course focuses on the further development of the four language skills in the domain of the students' major subject.

PREREQUISITES: The minimum of language knowledge and skills acquired at secondary school.

TEACHING METHODS: Seminars targeted at further development of the four language skills through individual and team work using audio and video, as well as multimedia.

METHOD OF ASSESSMENT: Evaluation is based on continuous assessment and students get a grade at the end of the semester.

INSTRUCTION LANGUAGE: English

BIBLIOGRAPHY: *1.Technical English, Pearson Longman; 2. Technical English for Professionals, Mark Ibbotson, Oxford University Press; 3. Career Paths: Mechanics, Jim D. Dearholt, Express Publishing; 4. Career Paths: Electrical Engineering, Denise Paulsen, Jenny Dooley, Express Publishing; 5. My Grammar Lab, Mark Foley, Diane Hall, Pearson.*

DESCRIPTION OF THE COURSE

Name of the course: **Sport**	Code: **SPR01**	Semester: **1**
Type of teaching: Lectures (L) Laboratory work (LW)/Tutorials (T) Course work (CW) Self-Study (SS)	Hours per semester: L – 0 hours T – 0 hours LW – 0 hours SS – 30 hours	Number of credits: **1**

LECTURER(S):

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Sen. Lect. Petar Doganov, PhD (FEA), E-mail: pdoganov@tu-plovdiv.bg,

Sen. Lect. Boris Spasov, PhD (FEA), E-mail: boris_spassov@tu-plovdiv.bg

Technical University of Sofia

COURSE STATUS IN THE CURRICULUM: Compulsory subject from the curricula for training of students to obtain Bachelor's degree, specialty „Mechanical Engineering and Instrumentation“, „Mechatronics“, „Computer Modelling and Mechanical Engineering“, Professional orientation 5.1 Mechanical engineering; „Transport Machinery and Technology“, „Aeronautical Engineering” Professional orientation“ 5.5 Transport, Navigation and Aviation, „Intelligent systems and artificial intelligence“, „Industrial Management“, “Graphic Design and Printing“, Professional qualification 5.13 General Engineering, Professional field 5 Technical Sciences.

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

DESCRIPTION OF THE COURSE: 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 – 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 unfavourable environmental factors; develop their physical qualities and experience. 2. Sports-Specific Physical Preparedness – 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 unfavourable environmental factors; develop their physical qualities and experience.

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

TEACHING METHODS: Seminars in accordance with the curriculum in PE and Sport.

METHOD OF ASSESSMENT: Evaluation is based on functional tests at the end of semester. Lecturer's signature is required at the end of semester and “Pass grade.

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY: 1. Владимиров В. Туризъм и ориентиране. Методическо ръководство за студентите от ТУ София, филиал Пловдив. Издателство на ТУ - София. 2010.

DESCRIPTION OF THE COURSE

Name of the course: **Mathematics II**	Code: **MAT22**	Semester: **2**
Type of teaching: Lectures (L) Tutorials (T)	Hours per semester: L – 30 hours T– 30 hours	Number of credits: **6**

LECTURER(S):
Assoc. Prof. Albena Pavlova, PhD (FME), tel.: 032 659 652, e-mail: albena_pavlova@tu-plovdiv.bg
Assist. Prof. Iva Naidenova, PhD (FME), tel.: 032 659 651, e-mail: iva.naydenova@tu-plovdiv.bg
Assist. Prof. Radka Koleva, PhD (FME), tel.: 032 659 651, e-mail: rkoleva@tu-plovdiv.bg
Technical University of Sofia

COURSE STATUS IN THE CURRICULUM: Compulsory subject from the curricula for training of students to obtain Bachelor's degree, specialties Mechanical Engineering and Instrumentation, Mechatronics, Computer Modelling and Mechanical Engineering, Professional orientation 5.1 Mechanical engineering; specialties Transport Machinery and Technology, Aeronautical Engineering, Professional orientation 5.5 Transport, Navigation and Aviation, specialties Industrial Management, Graphic Design and Printing, Professional orientation 5.13 General Engineering, Field 5 Technical Sciences.

AIMS AND OBJECTIVES OF THE COURSE: Familiarization the students with basic parts of the mathematical analysis and neighbour mathematical disciplines necessary for application disciplines.

DESCRIPTION OF THE COURSE: The main topics concern: Indefinite integral, Definite integral and Applications, Improper integral; Ordinary differential equations with separable variables. Basic types first order ODE; Linear differential equations from second and higher order with constant 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.

PREREQUISITES: Very good training in Mathematics I (MAT12).

TEACHING METHODS: Lectures and Tutorials.

METHOD OF ASSESSMENT: Written examination.

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY:
1. Колектив на ИПМИ, Висша математика, части II и III, Техника, 1986, 2. Колектив на ИПМИ, Избрани глави от математиката, Модули I – V, Печатна база ТУ–София, 1993, 3. Колектив на ИПМИ, Сборник от задачи по висша математика, части II и III, Техника, 1979, 4. Дойчинов Д., Математически анализ, София, 1994, 5. Топенчаров В. и колектив, Сборник от задачи по висша математика, части I и II, Техника, 1977, 6. Маринов М. и колектив, Задачи по висша математика, части I и II, 2006, 7. Каранджулов Л. И., М. Маринов, М. Славкова, Кратък справочник по висша математика, 2007.

DESCRIPTION OF THE COURSE

Name of the course: **Materials Science**	Code: **ENG01**	Semester: **2**
Type of teaching: Lectures (L) Laboratory work (LW) Course work (CW)	Hours per semester: L 45 hours LW 45 hours	Number of credits: **7**

LECTURER(S):
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Technical University of Sofia

COURSE STATUS IN THE CURRICULUM: Compulsory subject from the curricula for training of students to obtain Bachelor's degree, specialties Mechanical Engineering and Instrumentation , Computer Modell ,
Professional orientation 5.1 Mechanical engineering, specialties Transport Machinery and Technology Transport, Navigation and Aviation, Field 5 Technical Sciences.

AIMS AND OBJECTIVES OF THE COURSE: At the end of the course the students should receive basic knowledge of the structure, the properties and the application of the most important technical materials (metals and non-metals) used in the industry.

DESCRIPTION OF THE COURSE: The main topics concern: Construction of alloys, the methods of researching and testing them, the condition diagrams, the phaze conversion into liquid

chemical and thermal forces.

PREREQUISITES: Physics, Chemistry.

TEACHING METHODS: Lectures, laboratory with protocols and course work through description and defense.

METHOD OF ASSESSMENT: End of semester assessment (62%), laboratories (18%), course work (20%).

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY: 1. ., . . ., , 1998; 2. ;
; I ; 5. ; 6. Askeland D., The Sience and Engineering of Materials, second S. I. Edition, Chapman, 1992.

DESCRIPTION OF THE COURSE

Name of the course: **Mechanics I**	Code: **MEC01**	Semester: 2
Type of teaching: Lectures (L) Laboratory work (LW)/Tutorials (T) Course work (CW)	Hours per semester: L – 30 hours T – 15 hours LW – 15 hours	Number of credits: **7**

LECTURER(S):

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Assis. Prof. Eng. Chavdar Pashinski, PhD (FME), tel.: 0878302513, e-mail: pashinski@tu-plovdiv.bg
Technical University of Sofia

COURSE STATUS IN THE CURRICULUM: Compulsory subject from the curricula for training of students to obtain Bachelor's degree, specialties Mechanical Engineering and Instrumentation, Mechatronics, Computer Modelling and Mechanical Engineering, Professional orientation 5.1 Mechanical engineering; specialties Transport Machinery and Technology, Aeronautical Engineering, Professional orientation 5.5 Transport, Navigation and Aviation, Field 5 Technical Sciences.

AIMS AND OBJECTIVES OF THE COURSE: The course builds engineering and technical culture in students and develops knowledge and skills for independent work and engineering assessment of various types of technical problems. The exercises expand the practical knowledge and skills in the studied discipline.

DESCRIPTION OF THE COURSE: The main topics concern: Basic concepts and objects in mechanics. Subject, tasks and axioms of statics; Moment of force about a point and an axis; Types of supports, support reactions and equilibrium conditions; Concurrent, two and three- dimensional system of forces; Rod and composite construction; Friction; Kinematics of particles - methods for describing motion. Determination of speeds and accelerations; Kinematics of a mechanical system and an ideal rigid body - laws of motion in translational, rotational and planar motion. Determination of speeds and accelerations.

PREREQUISITES: Mathematics, Physics.

TEACHING METHODS: Lectures, using slides. Laboratory exercises are performed in a computer class using specialized software. The seminar exercises are presented in a classic version.

METHOD OF ASSESSMENT: Written exam at the end of the semester.

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY: 1. С. Бъчваров, Механика I част, София, 2001; А. Писарев, Ц. Парасков, С. Бъчваров, Курс по теоретична механика I част, Техника, 1986; И. Иванов, Техническа Механика, изд. Христо Г. Данов, 1974..

DESCRIPTION OF THE COURSE

Name of the course: **Electrical Engineering and Electronics**	Code: **EEA21**	Semester: **2**
Type of teaching: Lectures (L) Laboratory work (LW)	Hours per semester: L – 30 hours LW – 30 hours	Number of credits: **5**

LECTURER(S):
Assoc. Prof. Eng. Vasil Spasov, PhD (FEA), tel.: 032 659-535, e-mail: vasilspasov@tuplovdiv.bg
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COURSE STATUS IN THE CURRICULUM: Compulsory course from the curricula for training of students to obtain Bachelor's degree, specialties Mechanical Engineering and Instrumentation, Mechatronics, Computer Modelling and Mechanical Engineering, Professional orientation 5.1 Mechanical engineering; specialties Transport Machinery and Technology, Aeronautical Engineering, Professional orientation 5.5 Transport, Navigation and Aviation, Field 5 Technical Sciences.

AIMS AND OBJECTIVES OF THE COURSE: To yield the students the necessary minimum of theoretical and practical knowledge and skills in Electrical Engineering and Electronics.

DESCRIPTION OF THE COURSE: The main topics in module Electrical Engineering concern: Advantages and disadvantages of electric power; sources and electricity production; DC circuits; AC single and three-phase circuits; transformers; three-phase and single-phase induction motors; synchronous generators; DC machines; electrical equipment for measurement, control, monitoring and protection; starting, stopping, reversing and speed control of electric motors; assessment of the economic efficacy of the modes of operation of electrical devices. The main topics in module Electronics concern: PN Junction. Semiconductor Diodes. Bipolar Junction Transistors. Thyristor. FET Transistors. IGBTs. Optoelectronic Devices. Introduction to Integrated Circuit.

PREREQUISITES: Mechanics, Mathematics and Physics.

TEACHING METHODS: Lectures and laboratory exercises. The lectures are delivered using multimedia. The exercises are provided with a manual and are conducted in a laboratory with developed models and stands. For every exercise students prepare an individual protocol that is defended before the leading lecturer.

METHOD OF ASSESSMENT: Laboratory work (40%) and testing during the semester (60%).

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY:
1. Цветков Д., Д. Цанов, Л. Павлов. Електротехника и електроника, София, 1997, ISBN 439-03-4805-X; 2. Цветков Д., Д. Цанов, Л. Павлов, П. Ралчева. Основи на електротехниката и електрониката, София, Техника, 1989; 3. Илиев К., В. Спасов. Основи на електротехниката и електрониката, Издателство на ТУ-София, филиал Пловдив, 1997; 4. Кривошиев Г., К. Илиев и др. Ръководство за лабораторни упражнения по електротехника и приложна електроника. С.,Техника, 1989; 5. Масларов И., В. Райдовска. Електротехника и електроника. С., Авангард Прима, 2010, ISBN 978-954-323-782-1. 6. Христов, М.. Полупроводникови елементи, Нови знания, 2007; 7. Дандаров, А. Оптоелектрони пробори и интегрални схеми, ТУ-София, 1991; 8. Thomas L. Floyd, Electronic devices, 1988.

DESCRIPTION OF THE COURSE

Name of the course: **Foreign Language II**	Code: **LNG02**	Semester: **2**
Type of teaching: Tutorials (T)	Hours per semester: T – 30 hours	Number of credits: **2**

LECTURER(S):

Sen. Lect. Konstantina Nyagolova (FME, English)	0887276513	konstantinanik@yahoo.com
Sen. Lect. Nadya Popova (FME, English)	659 707	popovanadia@yahoo.com
Sen. Lect. Anet Arabadjieva (FME, English)	0892231353	anet2003@abv.bg
Sen. Lect. Nadezhda Geshanova (FME, English)	0889314932	geshanova@tu-plovdiv.bg
Sen. Lect. Dr Daniela Valeva (FME, English)	0897899039	daniela.valeva89@gmail.com

Technical University of Sofia

COURSE STATUS IN THE CURRICULUM: Compulsory subject from the curricula for training of students to obtain Bachelor's degree, specialties Mechanical Engineering and Instrumentation, Mechatronics, Computer Modelling and Mechanical Engineering, Professional orientation 5.1 Mechanical engineering; specialties Transport Machinery and Technology, Aeronautical Engineering, Professional orientation 5.5 Transport, Navigation and Aviation, specialties Industrial Management, Graphic Design and Printing, Professional orientation 5.13 General Engineering, Field 5 Technical Sciences.

AIMS AND OBJECTIVES OF THE COURSE: The course is targeted at further developing of students' language knowledge and practical skills in their specific professional field.

DESCRIPTION OF THE COURSE: The main topics concern: The course is taught at language levels determined through placement tests, based on the compulsory foreign language course taken in Semester 1 at TU – Sofia. No absolute beginner groups are formed. The course focuses on the further development of the four language skills in the domain of the students' the relevant specialty.

PREREQUISITES: Completed compulsory foreign language course **LNG01** in Semester 1.

TEACHING METHODS: Seminars targeted at further development of the four language skills through individual and team work using audio and video, as well as multimedia.

METHOD OF ASSESSMENT: Evaluation is based on continuous assessment and students get a grade at the end of the semester.

INSTRUCTION LANGUAGE: English

BIBLIOGRAPHY: *1.Technical English, Pearson Longman; 2. Technical English for Professionals, Mark Ibbotson, Oxford University Press; 3. Career Paths: Mechanics, Jim D. Dearholt, Express Publishing; 4. Career Paths: Electrical Engineering, Denise Paulsen, Jenny Dooley, Express Publishing; 5. My Grammar Lab, Mark Foley, Diane Hall, Pearson.*

DESCRIPTION OF THE COURSE

Name of the course: **Practicum**	Code: **PRC01**	Semester: **2**
Type of teaching: Lectures (L) Laboratory work (LW) Self-Study (SS)	Hours per semester: L – 0 hours LW – 0 hours SS – 60 hours	Number of credits: **2**

LECTURER(S):

Assoc. Prof. Angel Poparov, PhD (FME), tel: (032) 659 617 e-mail: poparan@abv.bg;

Assist. Prof. Sabi Sabev, PhD (FME), e-mail: sabi_sabev@tu-plovdiv.bg

Technical University of Sofia

COURSE STATUS IN THE CURRICULUM: Compulsory subject from the curricula for training of students to obtain Bachelor's degree, specialties Mechanical Engineering and Instrumentation, Mechatronics, Computer Modelling and Mechanical Engineering, Professional orientation 5.1 Mechanical engineering; specialties Transport Machinery and Technology, Aeronautical Engineering, Professional orientation 5.5 Transport, Navigation and Aviation, specialties Industrial Management, Graphic Design and Printing, Professional orientation 5.13 General Engineering, Field 5 Technical Sciences.

AIMS AND OBJECTIVES OF THE COURSE: Introducing to students with metal cutting machines, metal cutting tools, devices, metal processing by plastic deformation and welding.

DESCRIPTION OF THE COURSE: The main topics concern: Studying provided in the curriculum subjects at the end of the course students will be able to design processes of some of the most complex products in engineering, such as tools.

PREREQUISITES: Material Science.

TEACHING METHODS: Protocols for the results of research (observations).

METHOD OF ASSESSMENT: Oral examination on the subject withdrawn by the student.

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY: 1. Хаджийски П. Програмиране и настройване на металорежещи машини с ЦПУ, С., ТУ, 2005, Събчев П. М. Металорежещи инструменти, Техника, С., 1982, Палей М. М. Технология производства приспособления, пресформ и щанц. Машиностроение, М., 1971.

DESCRIPTION OF THE COURSE

Name of the course: **Sport**	Code: **SPR02**	Semester: **2**
Type of teaching: Lectures (L) Laboratory work (LW)/Tutorials (T) Course work (CW) Self-Study (SS)	Hours per semester: L – 0 hours T – 0 hours LW – 0 hours SS – 30 hours	Number of credits: **1**
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LECTURER(S):

Sen. Lect. Daniel Vladimdirov, PhD (FEA), Tel.: 032 659 646, E-mail: danielv@tu-plovdiv.bg,

Sen. Lect. Petar Doganov, PhD (FEA), E-mail: pdoganov@tu-plovdiv.bg,

Sen. Lect. Boris Spasov, PhD (FEA), E-mail: boris_spassov@tu-plovdiv.bg

Technical University of Sofia

COURSE STATUS IN THE CURRICULUM: Compulsory subject from the curricula for training of students to obtain Bachelor's degree, specialty „Mechanical Engineering and Instrumentation“, „Mechatronics“, „Computer Modelling and Mechanical Engineering“, Professional orientation 5.1 Mechanical engineering; „Transport Machinery and Technology“, „Aeronautical Engineering” Professional orientation“ 5.5 Transport, Navigation and Aviation, „Intelligent systems and artificial intelligence“, „Industrial Management“, “Graphic Design and Printing“, Professional qualification 5.13 General Engineering, Professional field 5 Technical Sciences.

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

DESCRIPTION OF THE COURSE: 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 – 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 unfavourable environmental factors; develop their physical qualities and experience. 2. Sports-Specific Physical Preparedness – 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 unfavourable environmental factors; develop their physical qualities and experience.

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

TEACHING METHODS: Seminars in accordance with the curriculum in PE and Sport.

METHOD OF ASSESSMENT: Evaluation is based on functional tests at the end of semester. Lecturer's signature is required at the end of semester and “Pass grade.

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY: 1. Владимиров В. Туризъм и ориентиране. Методическо ръководство за студентите от ТУ София, филиал Пловдив. Издателство на ТУ - София. 2010.