

DESCRIPTION OF THE COURSE

Name of the course: Mathematics I	Code: FBpIEe01	Semester: I
Type of teaching: Lectures and Tutorial	Lessons per week: L – 2 hours; T – 2 hour;	Number of credits: 5

LECTURER : Assoc. Prof. Dr. V.Proicheva , email: vproicheva@abv.bg
[тел 032 695 677](tel:032695677), email:vproicheva@abv.bg, assistant.Rumiana Gesheva, e-mail: rumigesheva@abv.bg
Technical University – Sofia, Branch Plovdiv

COURSE STATUS IN THE CURRICULUM:

Compulsory for the students specialty Industrial Engineering BEng programme of the
Language Faculty of Engineering.
Faculty of Eletronics and Automation, FEA

AIMS AND OBJECTIVES OF THE COURSE:

To provide fundamental knowledge for many other basic subjects – Physics, Mechanics, Statistics, Electrical Engineering, etc. and to develop more advanced level.

DESCRIPTION OF THE COURSE:

The main topics concern: algebraic expressions and manipulation; polynomials and rational functions; complex numbers; linear, quadratic and special equations and inequalities; mathematical induction; systems of equations and inequalities; functions and graphs; trigonometric functions and their inverse functions; differentiation; curve sketching, sums, area, plane analytic geometry.

PREREQUISITES: None

TEACHING METHODS: Lectures, tutorials, case studies.

METHOD OF ASSESSMENT:

Two tests, two homeworks (30%) and final written exam (70%).

INSTRUCTIONAL LANGUAGE: English.

BIBLIOGRAPHY:

1. Donevska S., B.D. Donevsky, Calculus and Analytic Geometry, Math I, Part I, Sofia, 2013;
2. Sullivan M., Algebra and Trigonometry, Plus MyMathLab – 10 Ed., Pearson, 2015;
3. REA's Problem Solver, Calculus, The Staff of REA, 2014;
4. Edwards C.H., D.E. Penny, Calculus, Early Transcendentals – 8 Ed., Pearson, 2009;
5. Steward J., Calculus – 8 Ed., Pearson, 2015

DESCRIPTION OF THE COURSE

Name of the course: Physics I	Code: FBpIEe02	Semester: I
Type of teaching: Lectures, Tutorial and Laboratory work	Lessons per week: L – 2 hours; T – 1 hour; LW – 1 hour	Number of credits: 5

LECTURER: Assoc. prof. Dr. Ivan. Vylkov, тел. 032 659 675; e-mail: iiksd2110@tu-plovdiv.bg;
Assoc. prof. Iliycho Iliev, 032 659 673; e-mail: iliev55@abv.bg;
assit.Ekaterina Georgieva, 032 659 673; e-mail: kageo@tu-plovdiv.bg;

Technical University - Sofia, Branch Plovdiv

COURSE STATUS IN THE CURRICULUM:

Compulsory for the students specialty Industrial Engineering BEng programme of the Faculty of Electronics and Automation

AIMS AND OBJECTIVES OF THE COURSE: The students will develop strong scientific approach and vision for the material world, they will acquire skills to deploy theoretical apparatus for analyzing and solving of basic practical problems. The experimental work will provide students with practical skills and attitude for application of the equipment and measurements of physical quantities. The acquired general knowledge, theoretical and experimental skills will be of benefit for all consecutive engineering subjects.

DESCRIPTION OF THE COURSE: The subject is dedicated to provide students with a system of knowledge for the fundamental quantities and laws of classical physics – mechanical, thermodynamic and electromagnetic phenomena. By using strongly simplified mathematical formalism, the course presents and analyses a broad range of phenomena from harmonious point of view of fundamental physical principles and laws. The theoretical fundamentals are illustrated comprehensively with a variety of practical examples from the real nature as well as from the technical world.

PREREQUISITES: Knowledge on differential and integral calculus, analytical geometry and vector analysis is required.

TEACHING METHODS: Traditional lecturing supplemented by multimedia presentations. Laboratory experiments carried out under the instructions of assistant professors according to relevant laboratory manual and students' reports examined by instructor.

METHOD OF ASSESSMENT: Written examination based mainly on problem solving at the end of I semester. Tests for current control during the semester are foreseen as well.

INSTRUCTIONAL LANGUAGE: English.

BIBLIOGRAPHY:

1. Douglas C. Giancoli, Physics: Principles with Applications, Pearson Prentice Hall, 2005.
2. Stefan Nitsolov, Physics 1 – lecture notes, 2002.
3. Alonso, M., E. J. Finn, Physics, Addison - Wesley Publishing Company, 1992;
4. Fishbane, Paul M, S. Gasiorowicz, Thornton S.T., Physics for Scientists and Engineers, extended version, Prentice-Hall Inc., 1993;
5. Gettys W. Edward, F. J. Keller, M. J. Skove, Physics, Classical and Modern, McGraw-Hill, 1989;

DESCRIPTION OF THE COURSE

Name of the course: Chemistry	Code: FBpIEe03	Semester: 1
Type of teaching: Lectures and laboratory work	Lessons per week: L -. 2 . hours; LW – 1 hour	Number of credits: . 4. . . .

LECTURER: Assist. Prof. Kalina Kamarska Ph.D. tel. 032 659 671; e-mail: kalina@gmail.com;

Technical University - Sofia, Branch Plovdiv

COURSE STATUS IN THE CURRICULUM: Compulsory for the students speciality “Industrial engineering”, faculty of electronics and automation, TU-Sofia, Branch Plovdiv, educational-qualifying degree “Bachelor”.

AIMS AND OBJECTIVES OF THE COURSE: The aim of the study in “Chemistry” is students to obtain knowledge about the structure and the properties of the substances and their transformations. This will allow them quickly and competently to solve the problems related with the quality and reliability of the articles, and also a numerous important problems, connected with the choice and purposeful application of the materials and technologies.

DESCRIPTION OF THE COURSE: Examined are topics, explaining the properties of substances depending on electronic structure and the kind of chemical bonding, selected items from electrochemistry, converters of chemical energy into electrical, corrosion and protection of the metals against corrosion. Physical – chemical concepts and characteristics of organic construction materials-polymers are submitted.

PREREQUISITES: Basic knowledge of General Chemistry from secondary school are necessary.

TEACHING METHODS: Lectures are delivered with the support of visual materials, slides, and posters. Laboratory practices are performed individually.

METHOD OF ASSESSMENT: Two two-hours assessments at mid and end of semester (80%) plus laboratories (20%). Grade two (2) – dont pass; (3) satisfy; (4) good; (5) very good; (6) excellent.

INSTRUCTIONAL LANGUAGE: English.

BIBLIOGRAPHY:

1. Lecture notes - <http://elfe.tu-sofia.bg>, Moodle, Chemistry, 2014.
2. Chemistry, The central Science 13th edition – T. Brown, H. Eugene Le May, B. Bursten, C. Murphy, M.Stolzfus; Publishers and its subsidiary, Academic Press, 2014.
3. Shreir’s corrosion 4th edition, vol.1, Academic Press, Elsevier, 2010.
4. Matthews P., Advanced Chemistry. Part 1 - Physical and Industrial; Part 2 - Organic and Inorganic, Cambridge Univ. Press (UK) 1999;
5. HANDBOOK OF CORROSION ENGINEERING, P.R.Roblisher, McGraw-Hill, NY, 1999

DESCRIPTION OF THE COURSE

Name of the course: Mechanics I	Code: FBpIEe04	Semester: 1
Type of teaching: Lectures and Tutorial work . . .	Lessons per week: L - . 2 . hours; T – 1 hour	Number of credits: . 4. . . .

LECTURER: Assoc.Prof. Dr. Dechko Rushev, 032 659 670, email: rushev@tu-plovdiv.bg,
assist prof. Raycho Raychev, 032 659 670

Technical University - Sofia, Branch Plovdiv

COURSE STATUS IN THE CURRICULUM: Compulsory for the students specialty Industrial Engineering BEng programme of the Faculty of Electronics and Automation.

AIMS AND OBJECTIVES OF THE COURSE: The primary purpose is to introduce to students the main laws of the Classical Mechanics as well as the methods for dynamic modelling solving and analysing of the typical mechanical systems.

DESCRIPTION OF THE COURSE: The course includes: main axioms and laws of the Classical Mechanics. There are proofs and explanations of the basic theorems and rules of the Statics and Kinematics. Students acquire common knowledge about the methods and their application for solving problems in Mechanics.

PREREQUISITES: Basic knowledge in Mathematics, Calculus and Physics is necessary.

TEACHING METHODS: Lectures and tutorial.

METHOD OF ASSESSMENT: Test at the exam sessions.

INSTRUCTIONAL LANGUAGE: English.

BIBLIOGRAPHY:

1. Buchvarov, S., Mechanics I – Statics, TU-Sofia, Sofia, 2007;
2. Kralov, I., Mechanics. Part I – Statics & Kinematics, TU-Sofia, Sofia, 2010;
3. Kralov, I., S. Tchitakov, Seminar courses for solving problems in Mechanics II – Dynamics, TUSofia, Sofia, 2008;
4. Kralov, I., S. Tchitakov, Seminar courses for solving problems in Mechanics I – Statics & Kinematics, TU-Sofia, Sofia, 2010;
5. Kralov, I., I. Ignatov, C. Velkova, T. Zhelyazov, Course for solving problems in Mechanics II – Dynamics, TU-Sofia, Sofia, 2015;
6. Johanson, Beer, Vector Mechanics for Engineers, part I and II, McGrawHill, USA, 1995.

DESCRIPTION OF THE COURSE

Name of the course: Applied Geometry and Engineering Graphics	Code: FBpIEe05	Semester: 1
Type of teaching: Lectures and laboratory	Lessons per week: L –1 hours; LW– 2 hours	Number of credits: 4

LECTURER: Assoc.Prof. Dr. |Georgi Dinev – tel.02 955 6396, e-mail:gdinev@tu-sofia.bg
and Assist. Zdravko Vitlarov – tel.032 659 660, email: vitlarov@tu-plovdiv.bg

Technical University - Sofia, Branch Plovdiv

COURSE STATUS IN THE CURRICULUM: Compulsory for the students specialty Industrial Engineering BEng programme of the Faculty of Electronics and Automation (FEA)

AIMS AND OBJECTIVES OF THE COURSE: To provide the methodology of engineering drawing as well as principals of descriptive geometry, and the basic knowledge for applying CAD systems to engineering drawings.

DESCRIPTION OF THE COURSE: An object of the discipline is learning of the basic principles of depicting of base graphical signs, and three-dimensional forms upon the plane, as the methods of forming the technical drawings. The discipline develops the spatial thinking of the students, while creating to them a skill mentally to restore three-dimensional structures by their plane effigies, as deciphering drawings of details and assembly units. At the end of the module, student will have had an introduction to the general principles of computer-aided-drafting and designing (CAD).

PREREQUISITES: None.

TEACHING METHODS: Lectures, using slides, case studies, laboratory and course work from laboratory manual and course work description preparation and defence.

METHOD OF ASSESSMENT: Two two-hours assessments at end of semester (70%) plus laboratories (10%) plus course work - assignments (20).

INSTRUCTIONAL LANGUAGE: English.

BIBLIOGRAPHY:

1. Luzadder W.J., J. M. Duff, Fundamentals of engineering drawing, Tenth Edition, Prentice-Hall International, Inc 1989;
2. Ostrowsky O., Engineering drawing: with CAD applications, Edward Arnold 1993.
3. Kenneth Morling, Geometric and Engineering Drawing, Third Edition, Elsevier London 2010

DESCRIPTION OF THE COURSE

Name of the course: Computing I	Code: FBpIEe06	Semester: . I
Type of teaching: Lectures, tutorials, laboratory work.	Lessons per week: L -. 1 hour; T - 1 hour LW – 2 hours	Number of credits: 5 . .

LECTURER: Asisst. Prof. Mitko Shopov, Ph.D. tel. 032 659 765; e-mail: mshopov@tu-plovdiv.bg; asisst. Donka Nesheva, tel. 032 659 728

Technical University - Sofia, Branch Plovdiv

COURSE STATUS IN THE CURRICULUM: Compulsory for the students from the Industrial Engineering BEng programme of the Faculty of Electronics and Automation (FEA).

AIMS AND OBJECTIVES OF THE COURSE: To provide basic knowledge about computers, computer environments and applications, to develop skills in computer-based problem solving and ANSI C programming, as well as to encourage the natural usage of computing facilities throughout the rest of the academic studies.

DESCRIPTION OF THE COURSE: The main topics concern: Computers and Applications. Modern Information Technologies. Computer Communications. Computer Architecture. Hardware. Computer as a Data Manipulator. Number Systems. Data Representation. Computer Software. Operating Environments. Graphical User Interface. Computer Programming. Programming Languages. Computer-Based Problem Solving Methodology. High-Level Programming Language C. General Program Format. The Fundamental Data Types. Operations with Data. Expressions. Statements. Basic Input and Output. Processing of Data. Control Structures. Modular Programming. Functions. Pointers. Addressing and De-referencing. Pointer Arithmetic. Advanced Use of Functions. Data Structuring. Arrays. Pointers and Arrays. Character Processing. Strings. Structures and Unions. Files. The Pre-processor. Macro Definitions.

PREREQUISITES: Mathematics, Proficiency in English.

TEACHING METHODS: Lectures, information visualization, case studies, individual and team work, project development, documentation and presentation, homework tasks, self-driven exercises, control tests.

METHOD OF ASSESSMENT: Two hours testing at the end of each semester (60%) plus laboratory work (40%).

INSTRUCTIONAL LANGUAGE: English.

BIBLIOGRAPHY:

1. Ralph Stair, George Reynolds. Principles of Information Systems, Boston, USA, 2013; 2. Kernighan, B., D. Ritchie. The C Programming Language, Prentice Hall, 1991; 3. K. N. King. C Programming: A Modern Approach, 2nd Edition, 2008; 4. Carlos Coronel, Steven Morris. Database Systems: Design, Implementation, & Management, USA, 2014; 5. Stephen Prata. C Primer Plus (5th Edition), 2004.

DESCRIPTION OF THE COURSE

Name of the course: Introduction to Manufacturing and Industrial Practice	Code: FBpIEe07	Semester: 1
Type of teaching: Lectures and Laboratory works	Lessons per week: L -. 1 . hours; LW – 1 hour	Number of credits: . 3

LECTURER: Asisst. Ptof. Dr. Georgi Levicharov, email: gmlemo@abv.bg

Technical University - Sofia, Branch Plovdiv

COURSE STATUS IN THE CURRICULUM: Compulsory for the students specialty Industrial Engineering BEng programme of the Faculty of Electronic and Automation.

AIMS AND OBJECTIVES OF THE COURSE: To familiarize the students with the main manufacturing principles, as well as with the problems of the manufacturing enterprises as a technical and economic system. It also includes workshop practice, built on a modular principle and closely related to the lecture material. Course material is visualized with appropriate video materials and supplemented with visits to laboratories and industrial enterprises. It also includes workshop practice in semi-industrial environment conducted on the campus area.

DESCRIPTION OF THE COURSE: Main topics include: Introduction to the specialty; Manufacturing as a technical and economic system; Casting, bulk deformation and sheet metal processing (features, types, equipment, products); Powder metallurgy (processes, equipment, products); Metal machining operations (features, types, equipment, products); CNC machines (elements, types of control, programming requirements); Assembly processes (types, ways, requirements, products); Production automation (basic principles, elements, trends of development); Production system efficiency. Basics of Rapid Prototyping Processes.

PREREQUISITES: AGEG, Materials Science.

TEACHING METHODS: Lectures (using video materials), workshop practice work, laboratory work protocols, etc.

METHOD OF ASSESSMENT: One two-hour assessment at the end of semester (80%), workshop practice (20%).

INSTRUCTIONAL LANGUAGE: English.

BIBLIOGRAPHY: 1. Bedworth D., M. Henderson, P. Wolfe, Computer-Integrated Design and Manufacturing, McGraw-Hill, Inc., New York, 1991; 2. Eef Moeskopf, Frits Feenstra, Introduction to Rapid Prototyping, CHAPTER 5, Online ISBN:978-1-84628-856-2, http://link.springer.com/chapter/10.1007%2F978-1-84628-856-2_5?LI=true,2004; 3. Emad Abouel Nasr, Ali K. Kamrani, Computer-Based Design and Manufacturing, CHAPTER 11, Online ISBN: 978-0-387-23324-6, http://link.springer.com/chapter/10.1007/978-0-387-23324-6_11, 2007; 4. Mikell P Groover, Fundamentals of Modern Manufacturing: Materials, Processes and Systems -4th Edition, ISBN-10: 1118231465, ISBN-13: 978-1118231463;

5. Rajender Singh, Introduction to Basic Manufacturing Processes And Workshop Technology,<http://ebookbrowse.com/introduction-to-basic-manufacturing-processes-and-workshop-technology-pdfd194060203>. Johanson, Beer, Vector Mechanics for Engineers, part I and II, McGrawHill, USA, 1995.

DESCRIPTION OF THE COURSE

Name of the course: English Language	Code: FBpIEe08	Semester: 1
Type of teaching: Lectures and Tutorial work	Lessons per week: L - 1 . hours; T – 2 hours	Number of credits: . 0

LECTURER: senior lecturer Konstantina Niagolova, 032 659 722

email: konstantinanik@yahoo.com

Technical University - Sofia, Branch Plovdiv

COURSE STATUS IN THE CURRICULUM: Compulsory for the students specialty Industrial Engineering BEng programme of the Faculty of Electronics and Automation, FEA.

AIMS AND OBJECTIVES OF THE COURSE: To provide basic knowledge and skills in the area of academic writing, listening and reading. To expand and ensure appropriate use of basic engineering terminology in English. To familiarise students with the requirements of international academic exams.

DESCRIPTION OF THE COURSE: The main topics include: Basic terminology-English for Science and Technology; International exams at CAE level; Academic writing skills; Academic reading and listening skills; Essay writing; Writing abstracts and summaries; Writing definitions; Referencing and quoting; Describing tables and graphs; Academic English language practice – word-formation, punctuation, signposting, functional exponents, cohesive devices, verb tenses, style, abbreviations.

PREREQUISITES: English language competence at level C1 as per ELFE entrance requirements.

TEACHING METHODS: Lectures, seminars and discussions, case studies, course work portfolio, group work, independent work.

METHOD OF ASSESSMENT: Project work portfolio, essay/summary writing, end-of-year test

INSTRUCTIONAL LANGUAGE: English.

BIBLIOGRAPHY: 1. Technical English Vocabulary and Grammar, Brieger N. And Pohl A., Summertown, 2007; 2. Oxford English for Electrical and Mechanical Engineering, Glendinning E.H. and Glendinning N., OUP, 2005; 3. Oxford Practice Grammar (Advanced), Yule G., OUP, 2007; 4. Ready for CAE, Norris R., Macmillan, 2008; 5. Advanced Language Practice, Vince M. With Sunderland P., Macmillan, 2003; 6. Passport to IELTS, Hopkins D. And Nettle M., Longman, 2002; 7. Academic Writing Course, Jordan, R.R., Harper Collins, 1990

DESCRIPTION OF THE COURSE

Name of the course: Sports	Code: FBpIEe09	Semester: I
Type of teaching: Laboratory works	Lessons per week: LW – 3 hour	Number of credits: 0

LECTURER: Assoc.. Prof. Dr. Valentin Vladimirov, tel. 032 659 646, email: valdes@tu-plovdiv.bg

Technical University - Sofia, Branch Plovdiv

COURSE STATUS IN THE CURRICULUM:

Compulsory for the students specialty Industrial Engineering BEng programme of the Faculty of Electronics and Automation, FEA.

AIMS AND OBJECTIVES OF THE COURSE: To help students relieve from hard mental work. To teach them exercise regularly and to help them learn new things and skills related to a given sport.

DESCRIPTION OF THE COURSE: Compulsory and specialized education for 1st and 2nd year students and optional for 3rd and 4th year students. Students attend two classes a week, each lasting 2 hours, and they choose the days and the time to attend one or two different sports. During semester each student should attend sports classes at least 11 times/subject or 22 times for both sports. The semester is considered valid if confirmed by lecturer(s)' signature(s). Students enroll for the next semester over again because changes in the syllabus may have occurred.

PREREQUISITES: Basic knowledge, abilities and habits related to physical culture.

TEACHING METHODS: Teaching begins with a lecture during the first school week which helps students realise how useful for them is to practice sports, the practicing schedule and mode of practicing sports. Students pass a physical ability test, participate in university tournaments, republican student's championships and state championships. Students choose among 13 kinds of sports and exercise depending on the facilities available.

METHOD OF ASSESSMENT: Each student should pass a test for physical ability at the beginning and at the end of the academic year. Participation in local tournaments and championships and in the republican all-student championships.

INSTRUCTIONAL LANGUAGE: English.

BIBLIOGRAPHY:

DESCRIPTION OF THE COURSE

Name of the course: Bulgarian Language (for foreigners)	Code: FBpIE10	Semester: I
Type of teaching: Tutorial works	Lessons per week: T – 2 hours	Number of credits: 0

LECTURER: Senior lecturer Mariana Ilieva tel.: 032 659 712, mariyana@gmail.com

Technical University - Sofia, Branch Plovdiv

COURSE STATUS IN THE CURRICULUM: Optional for the students specialty
Industrial Engineering BEng programme of the Faculty of Electronics and Automation, FEA.

AIMS AND OBJECTIVES OF THE COURSE: To provide basic knowledge and skills in the area of reproductive, productive and combined activity in Bulgarian language - writing, listening and reading. To ensure that the students use independently and fluently appropriate basic terminology in Bulgarian in everyday communications during their stay in Bulgaria.

DESCRIPTION OF THE COURSE: After preliminary teaching in writing and reading there follow 15 lexical topics: "Greetings and Introduction", "In the room", "Clock, time, calendar", "Breakfast in the confectionary", "Lunch in the canteen", "Dinner in a restaurant", "Shopping – at the bookstore, at the confectionary, at the greengrocer's, at the food store, at the dress shop, etc.", "Boyan is ill"- in a hospital, in the drug-store, etc.", etc. Each lexical topic is related to a corresponding grammar unit. The basic textbook is full of various exercises.

PREREQUISITES: None

TEACHING METHODS: Communicative - situation principle.

METHOD OF ASSESSMENT A two-hour written exam and oral discussion at the end of each semester (70%), independent work during the exercises (30%).

INSTRUCTIONAL LANGUAGE: Bulgarian.

BIBLIOGRAPHY:

1. Стоянова М., С. Стоянов, Български език за чуждестранни студенти, с., 1994;
2. Антова Ю., Е. Кирякова, Т. Накова, Български език, България и българите, С., 1997;
3. Русинов Р., С. Буров, Български език, В. Търново, 1985.

DESCRIPTION OF THE COURSE

Name of the course: Mathematics II	Code: FBpIEe11	Semester: II
Type of teaching: Lectures, :	Lessons per week: L – 2 hours; LW -1 hour; T – 1 hour;	Number of credits: 5

LECTURER : Assoc. Prof. Dr. Vasil Petrov, tel. 032 659 677, email: vasil1106@abv.bg

Technical University - Sofia , Branch Plovdiv

COURSE STATUS IN THE CURRICULUM:

Compulsory for the students specialty Industrial Engineering BEng programme of the Faculty of Electronics and Automation FEA.

AIMS AND OBJECTIVES OF THE COURSE: To provide fundamental knowledge for many other basic subjects and more emphasis to applications and work with scientific calculators.

DESCRIPTION OF THE COURSE: Indefinite Integrals of exponential and logarithmic Functions; Study the behavior and draw the graphs of exponential and logarithmic Functions; Definite Integrals; Improper Integrals; Differential Equations first and higher order; Matrix Analysis; Determinants; Eigenvalues and Eigenvectors; Simultaneous Systems of Equations; Surface in Space.

PREREQUISITES: Mathematics I.

TEACHING METHODS: Lectures, tutorials, laboratory work..

METHOD OF ASSESSMENT:

Two tests, two homeworks (30%) and final written exam (70%).

INSTRUCTIONAL LANGUAGE: English.

BIBLIOGRAPHY:

1. Donevska S., B.D. Donevsky, Calculus and Analytic Geometry, Math I, Part 2, Sofia, 2009;
2. Donevska S., B.D. Donevsky, Calculus and Analytic Geometry, Math I, Part 3, Sofia, 2009;
3. Donevska S., B.D. Donevsky, Calculus and Analytic Geometry, Math II, Part 1, Sofia, 2015;
4. Mendelson E., Schaum's Outline of Calculus, 3000 solved problems in Calculus, 2014;
5. Thomas & Finny, Calculus and Analytic Geometry, Addison Wesley -11th Ed., 2015;
6. O'Neil P.V., Advanced Engineering Mathematics, Wadsworth - 7th Ed., 2011;
7. Donevska S., B.D. Donevsky, Matrices for Engineers, Technical University of Sofia, 2010.

DESCRIPTION OF THE COURSE

Name of the course: Physics II	Code: FBpIEe12	Semester: II
Type of teaching: Lectures and Laboratory work	Lessons per week: L – 2 hours; LW – 1 hour	Number of credits: 4

LECTURER : Assoc. Prof Dr. Ivan Vylkov, tel. 032 659 675; e-mail: iiksd2110@tu-plovdiv.bg

Technical University - Sofia, Branch Plovdiv

COURSE STATUS IN THE CURRICULUM:

Compulsory for the students specialty Industrial Engineering BEng programme of the Faculty of Electronics and Automation, FEA.

AIMS AND OBJECTIVES OF THE COURSE:

To provide the students with knowledge on the basics of the physics.

DESCRIPTION OF THE COURSE:

General physics. Consists of: Electrical currents, Magnetism, Oscillatory Motion, Oscillations, Wave motion, Elastic Waves, Electromagnetic waves, Maxwell Equations, Emission and propagation of waves. Reflection, refraction and polarization of light. Interference and diffraction of light. Electrical structure of matter, atom's models. Interaction of electromagnetic radiation with matter. Fundamentals of quantum mechanics

PREREQUISITES: Mathematics I, Physics I.

TEACHING METHODS:

Lectures, using slides, laboratory course on manual and reports preparation and defense.

METHOD OF ASSESSMENT:

Written examination based mainly on problem solving at the end of I semester. Tests for current control during the semester are foreseen as well.

INSTRUCTIONAL LANGUAGE: English.

BIBLIOGRAPHY:

6. Douglas C. Giancoli, Physics: Principles with Applications, Pearson Prentice Hall, 2005.
7. Stefan Nitsolov, Physics 2 – lecture notes, 2004.
8. Alonso, M., E. J. Finn, Physics, Addison - Wesley Publishing Company, 1992;
9. Fishbane, Paul M, S. Gasiorowicz, Thornton S.T., Physics for Scientists and Engineers, extended version, Prentice-Hall Inc., 1993;
10. Gettys W. Edward, F. J. Keller, M. J. Skove, Physics, Classical and Modern, McGraw-Hill, 1989;
11. Halliday, D., R. Resnick, Fundamentals of Physics, extended version, John Wiley Publishing Company, 1993.

DESCRIPTION OF THE COURSE

Name of the course: Mechanics II	Code: FBpIEe13	Semester: II
Type of teaching: Lectures and Tutorial work . . .	Lessons per week: L -. 2 . hours; T – 1 hour	Number of credits: . 4.

LECTURER: Assoc.Prof. Dr. Dechko Rushev, tel.032 659 670, email: rushev@tu-plovdiv.bg

Technical University - Sofia, Branch Plovdiv

COURSE STATUS IN THE CURRICULUM: Compulsory for the students specialty Industrial Engineering BEng programme of the English Language Faculty of Engineering.

AIMS AND OBJECTIVES OF THE COURSE: The primary purpose is to introduce to students the main laws of the Classical Mechanics as well as the methods for dynamic modelling solving and analysing of the typical mechanical systems.

DESCRIPTION OF THE COURSE: The course includes: main axioms and laws of the Classical Mechanics. There are proofs and explanations of the basic theorems and rules of the Statics and Kinematics. Students acquire common knowledge about the methods and their application for solving problems in Mechanics.

PREREQUISITES: Basic knowledge in Mathematics, Mechanics I and Physics is necessary.

TEACHING METHODS: Lectures and tutorial.

METHOD OF ASSESSMENT: Test at the exam sessions.

INSTRUCTIONAL LANGUAGE: English.

BIBLIOGRAPHY:

1. Buchvarov, S., Mechanics I – Statics, TU-Sofia, Sofia, 2007;
2. Kralov, I., Mechanics. Part I – Statics & Kinematics, TU-Sofia, Sofia, 2010;
3. Kralov, I., S. Tchitakov, Seminar courses for solving problems in Mechanics II – Dynamics, TUSofia, Sofia, 2008;
4. Kralov, I., S. Tchitakov, Seminar courses for solving problems in Mechanics I – Statics & Kinematics, TU-Sofia, Sofia, 2010;
5. Kralov, I., I. Ignatov, C. Velkova, T. Zhelyazov, Course for solving problems in Mechanics II – Dynamics, TU-Sofia, Sofia, 2015;
6. Johanson, Beer, Vector Mechanics for Engineers, part I and II, McGrawHill, USA, 1995.

DESCRIPTION OF THE COURSE

Name of the course: ... Computing I.	Code: FBpIEe14	Semester: . II
Type of teaching: lectures, laboratory work. .	Lessons per week: L -. 1 hour; LW – 1 hour	Number of credits: 3 . .

LECTURER: Asisst. Prof. Mitko Shopov Ph.D. tel. 032 659 765; e-mail: mshopov@tu-plovdiv.bg;

Technical University – Sofia, Branch Plovdiv

COURSE STATUS IN THE CURRICULUM: Compulsory for the students from the Industrial Engineering BEng programme of the Faculty of Electronics and Automation, FEA

AIMS AND OBJECTIVES OF THE COURSE: To provide basic knowledge about computers, computer environments and applications, to develop skills in computer-based problem solving and ANSI C programming, as well as to encourage the natural usage of computing facilities throughout the rest of the academic studies.

DESCRIPTION OF THE COURSE: The main topics concern: Computers and Applications. Modern Information Technologies. Computer Communications. Computer Architecture. Hardware. Computer as a Data Manipulator. Number Systems. Data Representation. Computer Software. Operating Environments. Graphical User Interface. Computer Programming. Programming Languages. Computer-Based Problem Solving Methodology. High-Level Programming Language C. General Program Format. The Fundamental Data Types. Operations with Data. Expressions. Statements. Basic Input and Output. Processing of Data. Control Structures. Modular Programming. Functions. Pointers. Addressing and De-referencing. Pointer Arithmetic. Advanced Use of Functions. Data Structuring. Arrays. Pointers and Arrays. Character Processing. Strings. Structures and Unions. Files. The Pre-processor. Macro Definitions.

PREREQUISITES: Mathematics, Proficiency in English.

TEACHING METHODS: Lectures, information visualization, case studies, individual and team work, project development, documentation and presentation, homework tasks, self-driven exercises, control tests.

METHOD OF ASSESSMENT: Two hours testing at the end of each semester (60%) plus laboratory work (40%).

INSTRUCTIONAL LANGUAGE: English.

BIBLIOGRAPHY:

1. Ralph Stair, George Reynolds. Principles of Information Systems, Boston, USA, 2013; 2. Kernighan, B., D. Ritchie. The C Programming Language, Prentice Hall, 1991; 3. K. N. King. C Programming: A Modern Approach, 2nd Edition, 2008; 4. Carlos Coronel, Steven Morris. Database Systems: Design, Implementation, & Management, USA, 2014; 5. Stephen Prata. C Primer Plus (5th Edition), 2004.

DESCRIPTION OF THE COURSE

Name of the course: Electrical Engineering I	Код: FBpIEe15	Semester: 2
Type of teaching: Lectures, tutorials and laboratory work	Lessons per week: L – 2 hours; T – 1 hour; LW -1	Number of credits: 5

LECTURER: Assoc. Prof. Vasil Spasov, Ph.D., tel. 032 659535, e-mail: vasilspasov@yahoo.com.
Technical University- Sofia, branch Plovdiv.

COURSE STATUS IN THE CURRICULUM:

The subject is compulsory for the students of the specialty Industrial Engineering, BEng programme.

AIMS AND OBJECTIVES OF THE COURSE:

To provide the basic knowledge about the electrical quantities, methodology of circuit analysis, application of network theorems for both DC and AC electric circuits. The idea of the course is to cover the fundamentals of the subject and at the same time to be easy for understanding.

DESCRIPTION OF THE COURSE:

The main topics concern: Resistive circuits- basic laws, series and parallel connection of resistors; sources of electrical energy- ideal and real voltage and current sources; analysis methods- nodal and mesh analysis; network theorems- Thevenin's and Norton's theorems, superposition; energy storage elements- capacitors and inductors, series and parallel connection; transients in simple circuits- RC and RL circuits; sinusoidal excitation and harmonics- properties of sinusoids, use of complex numbers, phasors, impedance and admittance; AC steady-state analysis; power- average power, power factor, complex power; frequency response- resonance, simple filters; three-phase circuits- basic relationships; transformers- voltage and current transformers.

PREREQUISITES:

Mathematics, Physics 1 and 2.

TEACHING METHODS:

Lectures using multimedia, laboratory work in groups including protocols preparation and defence.

METHOD OF ASSESSMENT:

Final exam at the end of semester.

INSTRUCTIONAL LANGUAGE: English.

BIBLIOGRAPHY:

1. Valeri Mladenov, Simeon Vladov, Theory of Electrical Engineering, P.H. "KING", 2015
2. Valeri Mladenov, Simeon Vladov, Electrical Engineering, P.H. "KING", 2013
3. Nikolay Gourov, Laboratory Practicals Manual on Electrical Engineering I, Publishing House of the Technical University – Sofia, 2007
4. William Hart Hayt, Jr, Jack Ellsworth Kemmerly, Steven M. Durbin Engineering circuit analysis – 8th ed., McGraw-Hill Companies, Inc., 2012
5. Charles K. Alexander and Matthew N. O. Sadiku Fundamentals of Electric Circuits – 5th ed., McGraw-Hill Companies, Inc 2012
6. Bell A. C., Whitehead R. W. Basic Electrical and Electronic Engineering, Blackwell scientific publications, 1993

DESCRIPTION OF THE COURSE

Name of the course Electronics	Code: FBpIEe16	Semester: 2
Type of teaching: Lectures and laboratory work Course work	Lessons per week: L – 2 h.; LW–1 h.	Number of credits: 5

LECTURER: Assoc. Prof. Dr. Galidia Petrova, tel.: 032 659 719, email: gip@tu-plovdiv.bg

Technical University - Sofia, Branch Plovdiv

COURSE STATUS IN THE CURRICULUM: Compulsory for the students of specialty Industrial Engineering BEng program of the Faculty of electronics and Automation, FEA

AIMS AND OBJECTIVES OF THE COURSE: To provide fundamental knowledge about basic semiconductor devices, circuits and systems of analogue, digital and power electronics.

DESCRIPTION OF THE COURSE: The main topics concern: Semiconductors and semiconductor devices; Discrete analogue electronics – amplifiers, oscillators, rectifiers, filters, regulators; Analogue integrated circuits - operational amplifiers, linear and nonlinear applications; Digital systems – basics, combinational logic, sequential logic, digital devices, memory devices; Data acquisition and conversion – D/A and A/D converters, specifications, data acquisition systems; Power electronics – power semiconductor devices, controlled rectifiers, and power supplies.

PREREQUISITES: Mathematics, Physics, Electrical engineering.

TEACHING METHODS: Lectures, using slides, case studies, laboratory and course work from laboratory manual, work in teams, protocols and of course work description and defense.

METHOD OF ASSESSMENT: A three-hour assessments at the end of semester 3 (80%) plus results of the lab assignments of course work (20%).

INSTRUCTIONAL LANGUAGE: English.

BIBLIOGRAPHY:

1. Dinov R., Popov E., Kolev N., Electronics, part 1 and 2, TU, Sofia, 2007;
2. Kolev N., Popov E., Dinov R., Electronics - Laboratory manual, TU, Sofia, 2005;
3. Roth C.H., Fundamentals of Logic design, West Publishing Company 1992;
4. McCalla Th. R., Digital Logic and Computer Design, Macmillan Publishing Company in New York 1992;
5. Franco S., Design with Operational Amplifiers and Analog Integrated Circuits, McGraw Hill, 2002;

6. Agarwal A., J. Lang, Foundations of Analog and Digital Electronic Circuits, Elsevier Inc., 2005;
7. Horowitz P., W. Hill, The Art of Electronics, Cambridge University Press, 1992;
8. Rashid M. Microelectronic Circuits Analysis and Design, Cengage Learning, 2011;
9. Tooley M., Electronic Circuits: Fundamentals and Applications, Elsevier, 2006;
10. Hambley A., Electrical engineering: principles and applications / Allan R. Hambley. - 5th ed., Prentice Hall, 2011.
11. Bird B.M., King K.G., Pedder D.A.G., "An Introduction to Power Electronics", 2nd Edition, John Wiley & Sons, 1993;
12. Lander C.W., Power Electronics, 3rd Edition, McGraw - Hill Book Company, 1993.

DESCRIPTION OF THE COURSE

Name of the course	Code: FBpIEe17	Semester: 2
Materials Science		
Type of teaching: Lectures and laboratory work	Lessons per week: L - 2 hours, LW - 1 hour	Number of credits: 3

LECTURER:

Assis. Prof. Georgi Levicharov, PhD, tel. 032 659 624; e-mail: gmlemo@abv.bg

Technical University - Sofia, Branch Plovdiv

COURSE STATUS IN THE CURRICULUM: Compulsory for the students specialty Industrial Engineering BEng programme of the Faculty of Electronics and Automation, (FEA).

AIMS AND OBJECTIVES OF THE COURSE: To give knowledge about structures, properties, competition and future trends for applications of convenient and advanced materials. To teach students how change structures properties or design new mechanical properties of materials.

DESCRIPTION OF THE COURSE: The main topics concern: Atomic-crystal structure of materials: Atomic bonding, crystal lattices, parameters, coordination number, vacancies and dislocations. Equilibrium solidification -Metastable and Stable Iron-Carbon Phase Diagrams. Ferrous and Non-Ferrous Alloys; Phase and structure transformations: Continuous Cooling diagram Transformation (CCT) and Temperature Time Transformation (TTT) Phase Diagrams; Structure and properties changes. Mechanical properties: Tensile and Bending Strength, Modulus of Elasticity, Elongation, Reduction in Area, Hardness, Toughness, Fatigue, Creep, Brittle and Ductile Fracture. Electrical properties: Insulators: Electrical Conductivity, Polarization of Dielectrics, Dielectric Losses, Aging; Gas, Natural, Artificial Fluid Dielectrics; Solid Non-organic and Organic Insulators; Conductor types and applications, Materials with high conductivity. Magnetic Soft and Magnetically Hard Materials. Polymers; Ceramic materials; Composite materials.

PREREQUISITES: Physics, Chemistry

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

METHOD OF ASSESSMENT: Two 1,5 hours assessments at mid and end of semester (80%) plus laboratories (20%).

INSTRUCTIONAL LANGUAGE: English.

BIBLIOGRAPHY:

1. William D. Callister, David G. Rethwisch. Materials Science and Engineering: An Introduction, 9th Edition, John Wiley & Sons, Inc., 2014
2. Donald R. Askeland, Pradeep P. Fulay and Wendelin J. Wright. The Science and Engineering of Materials. Cengage Learning (6 edition), 2010
3. Ashby, Michael; Hugh Shercliff; David Cebon. Materials: engineering, science, processing and design (1st ed.). Butterworth-Heinemann, 2007
4. D. Hull, T. W. Clyne. An Introduction to Composite Materials. Cambridge University Press, 1996
5. Arthur W. Birley, Barry Haworth, Jim Batchelor. Physics of Plastics: Processing, Properties and Materials Engineering. Hanser, 1992

DESCRIPTION OF THE COURSE

Name of the course: English Language	Code: FBpIEe18	Semester: 2
Type of teaching: Lectures and Tutorial work	Lessons per week: L - 1 . hours; T – 2 hours	Number of credits: . 0

LECTURER: Senior lecturer Konstantina Niagolova, tel. 032 659 722, email:

konstantinanic@yahoo.com

Technical University - Sofia, Branch Plovdiv

COURSE STATUS IN THE CURRICULUM: Compulsory for the students specialty Industrial Engineering BEng programme of the Faculty of Electronics and Automation, FEA.

AIMS AND OBJECTIVES OF THE COURSE: To provide basic knowledge and skills in the area of academic writing, listening and reading. To expand and ensure appropriate use of basic engineering terminology in English. To familiarise students with the requirements of international academic exams.

DESCRIPTION OF THE COURSE: The main topics include: Basic terminology-English for Science and Technology; International exams at CAE level; Academic writing skills; Academic reading and listening skills; Essay writing; Writing abstracts and summaries; Writing definitions; Referencing and quoting; Describing tables and graphs; Academic English language practice – word-formation, punctuation, signposting, functional exponents, cohesive devices, verb tenses, style, abbreviations.

PREREQUISITES: English language competence at level C1 as per ELFE entrance requirements.

TEACHING METHODS: Lectures, seminars and discussions, case studies, course work portfolio, group work, independent work.

METHOD OF ASSESSMENT: Project work portfolio, essay/summary writing, end-of-year test

INSTRUCTIONAL LANGUAGE: English.

BIBLIOGRAPHY: 1. Technical English Vocabulary and Grammar, Brieger N. And Pohl A., Summertown, 2007; 2. Oxford English for Electrical and Mechanical Engineering, Glendinning E.H. and Glendinning N., OUP, 2005; 3. Oxford Practice Grammar (Advanced), Yule G., OUP, 2007; 4. Ready for CAE, Norris R., Macmillan, 2008; 5. Advanced Language Practice, Vince M. With Sunderland P., Macmillan, 2003; 6. Passport to IELTS, Hopkins D. And Nettle M., Longman, 2002; 7. Academic Writing Course, Jordan, R.R., Harper Collins, 1990

DESCRIPTION OF THE COURSE

Name of the course: Introduction to Manufacturing and Industrial Practice	Code: FBpIEe19	Semester: 2
Type of teaching: Laboratory works	Lessons per week: LW – 1 hour	Number of credits: . 1

LECTURER: Assist. Ptof. Dr. Georgi Levicharov, tel. 032 659 624, email: gmlemo@abv.bg

Technical University - Sofia , Branch Plovdiv

COURSE STATUS IN THE CURRICULUM: Compulsory for the students specialty Industrial Engineering BEng programme of the Faculty of Electronics and Automation,FEA.

AIMS AND OBJECTIVES OF THE COURSE: To familiarize the students with the main manufacturing principles, as well as with the problems of the manufacturing enterprises as a technical and economic system. It also includes workshop practice, built on a modular rinciple and closely related to the lecture material. Course material is visualized with appropriate video materials and supplemented with visits to laboratories and industrial enterprises. It also includes workshop practice in semi-industrial environment conducted on the campus

DESCRIPTION OF THE COURSE: Main topics include: Introduction to the specialty; Manufacturing as a technical and economic system; Casting, bulk deformation and sheet metal processing (features, types, equipment, products); Powder metallurgy (processes, equipment, products); Metal machining operations (features, types, equipment, products); CNC machines (elements, types of control, programming requirements); Assembly processes (types, ways, requirements, products); Production automation (basic principles, elements, trends of development); Production system efficiency. Basics of Rapid Prototyping Processes.

PREREQUISITES: AGEG, Materials Science.

TEACHING METODS: Lectures (using video materials), workshop practice work, laboratory work protocols, etc.

METHOD OF ASSESSMENT: One two-hour assessment at the end of semester (80%), workshop practice (20%).

INSTRUCTIONAL LANGUAGE: English.

BIBLIOGRAPHY: 1. Bedworth D., M. Henderson, P. Wolfe, Computer-Integrated Design and Manufacturing, McGraw-Hill, Inc., New York, 1991; 2. Eef Moeskopf, Frits Feenstra, Introduction to Rapid Prototyping, CHAPTER 5, Online ISBN:978-1-84628-856-2, http://link.springer.com/chapter/10.1007%2F978-1-84628-856-2_5?LI=true,2004; 3. Emad Abouel Nasr, Ali K. Kamrani, Computer-Based Design and Manufacturing, CHAPTER 11, Online ISBN: 978-0-387-23324-6, ttp://link.springer.com/chapter/10.1007/978-0-387-23324-6_11, 2007; 4. Mikell P Groover, Fundamentals of Modern Manufacturing: Materials, Processes and Systems -4th Edition, ISBN-10: 1118231465, ISBN-13: 978-1118231463; 6. Rajender Singh, Introduction to Basic Manufacturing Processes And Workshop Technology,http://ebookbrowse.com/introduction-to-basic-manufacturing-processes-and-workshop-technology-pdfd194060203. Johanson, Beer, Vector Mechanics for Engineers, part I and II, McGrawHill, USA, 1995.

DESCRIPTION OF THE COURSE

Name of the course: Sports	Code: FBpIEe20	Semester: 2
Type of teaching: Laboratory works	Lessons per week: LW – 3 hour	Number of credits: 0

LECTURER: Assoc. Prof. Dr. Valentin Vladimirov, tel. 032 659 646, email: valdes@tu-plovdiv.bg

Technical University - Sofia, branch Plovdiv

COURSE STATUS IN THE CURRICULUM:

Compulsory for the students specialty Industrial Engineering BEng programme of the Faculty of Electronics and Automation, FEA.

AIMS AND OBJECTIVES OF THE COURSE: To help students relieve from hard mental work. To teach them exercise regularly and to help them learn new things and skills related to a given sport.

DESCRIPTION OF THE COURSE: Compulsory and specialized education for 1 st and 2 nd year students and optional for 3rd and 4th year students. Students attend two classes a week, each lasting 2 hours, and they chose the days and the time to attend one or two different sports. During semester each student should attend sports classes at least 11 times/subject or 22 times for both sports. The semester is considered valid if confirmed by lecturer(s)' signature(s). Students enroll for the next semester over again because changes in the syllabus may have occurred.

PREREQUISITES: Basic knowledge, abilities and habits related to physical culture.

TEACHING METHODS: Teaching begins with a lecture during the first school week which helps students realise how useful for them is to practice sports, the practicing schedule and mode of practicing sports. Students pass a physical ability test, participate in university tournaments, republican student's championships and state championships. Students chose among 13 kinds of sports and exercise depending on the facilities available.

METHOD OF ASSESSMENT: Each student should pass a test for physical ability at the beginning and at the end of the academic year. Participation in local tournaments and championships and in the republican all-student championships.

INSTRUCTIONAL LANGUAGE: English.

BIBLIOGRAPHY:

DESCRIPTION OF THE COURSE

Name of the course: Bulgarian Language (for foreigners)	Code: FBpIE21	Semester: 2
Type of teaching: Tutorial works	Lessons per week: T – 2 hours	Number of credits: 0

LECTURER: Senior Lecturer Mariana Ilieva tel.: 032 659 712, e-mail: mariyana@gmail.com

Technical University - Sofia, Branch Plovdiv

COURSE STATUS IN THE CURRICULUM: Optional for the students specialty Industrial Engineering BEng programme of the Faculty of Electronics and Automation, FEA.

AIMS AND OBJECTIVES OF THE COURSE: To provide basic knowledge and skills in the area of reproductive, productive and combined activity in Bulgarian language - writing, listening and reading. To ensure that the students use independently and fluently appropriate basic terminology in Bulgarian in everyday communications during their stay in Bulgaria.

DESCRIPTION OF THE COURSE: After preliminary teaching in writing and reading there follow 15 lexical topics: "Greetings and Introduction", "In the room", "Clock, time, calendar", "Breakfast in the confectionary", "Lunch in the canteen", "Dinner in a restaurant", "Shopping – at the bookstore, at the confectionary, at the greengrocer's, at the food store, at the dress shop, etc.", "Boyan is ill"- in a hospital, in the drug-store, etc.", etc. Each lexical topic is related to a corresponding grammar unit. The basic textbook is full of various exercises.

PREREQUISITES: None

TEACHING METHODS: Communicative - situation principle.

METHOD OF ASSESSMENT A two-hour written exam and oral discussion at the end of each semester (70%), independent work during the exercises (30%).

INSTRUCTIONAL LANGUAGE: Bulgarian.

BIBLIOGRAPHY:

1. Стоянова М., С. Стоянов, Български език за чуждестранни студенти, с., 1994;
2. Антова Ю., Е. Кирякова, Т. Накова, Български език, България и българите, С., 1997;
3. Русинов Р., С. Буров, Български език, В. Търново, 1985.