

## DESCRIPTION OF THE COURSE

Name of the course <b>Materials Cutting</b>	Code: <b>BpMTT01</b>	Semester: <b>5</b>
Type of teaching: Lectures, (L) Laboratory work (LW)/Seminars (S)	Hours per semester: L – 15 hours LW – 15 hours	Number of credits: <b>5</b>

### **LECTURER:**

Assoc. Prof. Angel Stoilov Poparov, PhD (FME), tel.: 659 617, email: [poparan@abv.bg](mailto:poparan@abv.bg),  
Technical University of Sofia

**COURSE STATUS IN THE CURRICULUM:** Compulsory subject from the curriculum for training of students to obtain Bachelor's degree, specialty Mechanical Engineering and Technologies, Professional orientation 5.1 Mechanical Engineering, Field 5 Technical Sciences.

**AIMS AND OBJECTIVES OF THE COURSE:** Introducing the students to the theoretical basics of the materials cutting process. These are the foundation for studying the subject of “Metal-cutting Instruments”, “Metal-cutting Machines”, “Technology of Machine Building”, etc.

**DESCRIPTION OF THE COURSE:** When cutting metals, the morphology of the processed surface is achieved by allocating a definite amount of the billet material as swarf by relative shifting of the instrument from the billet. Common regularities, subject to examination and explanation, are valid for all varieties of cutting processing. The separation of the material when swarf is not formed is not an objective of the theory of materials cutting /for example cutting with scissors/.

**PREREQUISITES:** Required knowledge of Mathematics, Mechanics, Resistance of Materials, Materials Science and general knowledge of metal cutting machines and instruments.

**TEACHING METHODS:** Lectures and laboratory work.

**METHOD OF ASSESSMENT:** Written examination.

**INSTRUCTION LANGUAGE:** Bulgarian.

**BIBLIOGRAPHY:** 1.Вачев А. А. Рязане на материалите. Част 1: Геометрични, кинематични и технологични параметри на процеса рязане. ТУ-София, Филиал Пловдив, 2000; 2.Вачев А. А. Рязане на материалите. Част 2: Физични явления и параметри на процеса рязане. ТУ-София, Филиал Пловдив, 2000; 3.Вачев А. А. Рязане на материалите. Ръководство за лабораторни упражнения. ТУ-София, Филиал Пловдив, 2004.

## DESCRIPTION OF THE COURSE

Name of the course <b>Cutting Tools</b>	Code: <b>BpMTT02</b>	Semester: 5
Type of teaching: Lectures, (L) Laboratory work (LW)/Seminars (S)	Hours per semester: L – 15 hours LW – 10 hours	Number of credits: <b>5</b>
Course project (CP)	Code <b>BMTT07</b>	Number of credits: <b>2</b>

### **LECTURER:**

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Technical University of Sofia

**COURSE STATUS IN THE CURRICULUM:** Compulsory subject from the curriculum for training of students to obtain Bachelor's degree, specialty Mechanical Engineering and Technologies, Professional orientation 5.1 Mechanical Engineering, Field 5 Technical Sciences.

**AIMS AND OBJECTIVES OF THE COURSE:** The subject aims at introducing the students to the types of tools, their characteristics and exploitation. The development of the thesis introduces the students to the tool's design.

**DESCRIPTION OF THE COURSE:** The subject treats both the basic problems of the design and exploitation and the types of the metal cutting tools.

**PREREQUISITES:** Required knowledge in Metal Cutting, Metals Science, Metal Cutting Machines and Technology of Machine Building.

**TEACHING METHODS:** Lectures, laboratory work and thesis.

**METHOD OF ASSESSMENT:** Written examination.

**INSTRUCTION LANGUAGE:** Bulgarian.

**BIBLIOGRAPHY:** 1. Николчева Г. Режещи инструменти. Интерпрес - София, 2000; 2. Иванов В. К. Режещи инструменти. Русенски Университет, 1998; 3. Русев К. Р., В. К. Иванов. Металорежещи инструменти. Ръководство за лабораторни упражнения. ВТУ "Ангел Кънчев". Русе, 1984.

## DESCRIPTION OF THE COURSE

Name of the course <b>Metal Cutting Machines</b>	Code: <b>BpMTT03</b>	Semester: <b>5</b>
Type of teaching: Lectures, (L) Laboratory work (LW)/Seminars (S)	Hours per semester: L – 15 hours LW – 10 hours	Number of credits: <b>5</b>

### **LECTURER:**

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Technical University of Sofia

**COURSE STATUS IN THE CURRICULUM:** Compulsory subject from the curriculum for training of students to obtain Bachelor's degree, specialty Mechanical Engineering and Technologies, Professional orientation 5.1 Mechanical Engineering, Field 5 Technical Sciences.

**AIMS AND OBJECTIVES OF THE COURSE:** The subject aims at introducing the students to the ways of exploitation, calibration, principles of design and types of metal cutting machines.

**DESCRIPTION OF THE COURSE:** The subject aims at providing basic knowledge concerning the technological possibilities, applicability, structure, design and kinematic characteristics and the control of various types of metal cutting machines. Basic topics are: design and kinematic analysis and calibration of: lathe, mill, drilling and abrasive machines with rectilinear main operation, specialised cog-processing machines, aggregate machines and Machine Tools with CNC.

**PREREQUISITES:** Machine elements, Theoretical Mechanics, Theory of Machines and Mechanisms, Metal Cutting and Metal Cutting Instruments.

**TEACHING METHODS:** Lectures supported by slides, tabloids and laboratory exercises with written statement about the research results (calibration) of the widely used metal cutting machines, placed in the laboratory of Machine Building Technics and Technologies and other sections of the branch.

**METHOD OF ASSESSMENT:** Written examination.

**INSTRUCTION LANGUAGE:** Bulgarian.

**BIBLIOGRAPHY:** 1. Радев В. Конструирание на металорежещи машини, С., Техника, 1968; 2. Проников А. С. и др. Металорежущие станки. М., Машиностроение, 1981; 3. Пуш В.Э. и др. Металорежущие станки. М., Машиностроение, 1985; 4. Попов Г.Т. Металорежещи машини - част I, С., ПБТУ – София, 1994; 5. Любенов А., С. Сяров., П. Петков. Ръководство за лабораторни упражнения по металорежещи машини, С., Техника, 1984; 6. Мишев Г.А. Ръководство за лабораторни упражнения по металорежещи машини, Пловдив, ВИХВП, 1984.

## DESCRIPTION OF THE COURSE

Name of the course <b>Technology of Casting Production</b>	Code: <b>BpMTT04</b>	Semester: 5
Type of teaching: Lectures, (L) Laboratory work (LW)/Seminars (S)	Hours per semester: L – 15 hours LW – 15 hours	Number of credits: 5

### **LECTURER:**

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Technical University of Sofia

**COURSE STATUS IN THE CURRICULUM:** Compulsory subject from the curriculum for training of students to obtain Bachelor's degree, specialty Mechanical Engineering and Technologies, Professional orientation 5.1 Mechanical Engineering, Field 5 Technical Sciences.

**AIMS AND OBJECTIVES OF THE COURSE:** The course aims at giving fundamental knowledge of the technological processes in the casting production, of the principles of constructing technological casts, of the properties and the qualities of various types of alloy casts.

**DESCRIPTION OF THE COURSE:** The main points of the technological processes in casting production are discussed. The production of casts in sand-and-clay mould is studied. The principles of constructing technological moulds are discussed. The special methods of casting are considered. The basic methods of casting and melting ferrous and non-ferrous metals are given.

**PREREQUISITES:** Required knowledge of Physics, Chemistry and Mathematics, Materials Science Part I and II.

**TEACHING METHODS:** Lectures supported by slides, laboratory work with written statements and course work with description and defense.

**METHOD OF ASSESSMENT:** Written examination and discussion.

**INSTRUCTION LANGUAGE:** Bulgarian.

**BIBLIOGRAPHY:** 1. Ангелов Г. Технология на лярското производство. ДИ “Техника”, София, 1988; 2. Стоянов Н. Технология на лярството. ДИ “Техника”, София, 1987; 3. Михайлова А. М. Литейное производство. М., “Машиностроение”, 1987; 4. Галдин Н. М, Д. Ф. Чернега и др. Цветное литье. М., “Машиностроение”, 1989.

## DESCRIPTION OF THE COURSE

Name of the course: <b>Unconventional technologies</b>	Code: <b>BpMTT05</b>	Semester: <b>5</b>
Type of teaching: Lectures (L) Laboratory work (LW)/Seminars (S) Course work (CW)	Hours per semester: L – 15 hours S – 10 hours LW – 0 hours	Number of credits: <b>5</b>

### **LECTURER(S):**

Assoc. Prof. Eng. Angel Lengerov, PhD (FME), tel.: 659 624, e-mail: [anlen@tu-plovdiv.bg](mailto:anlen@tu-plovdiv.bg)

Technical University of Sofia

**COURSE STATUS IN THE CURRICULUM:** Compulsory subject from the curriculum for training of students to obtain Bachelor's degree, specialty Mechanical Engineering and Technologies, Professional orientation 5.1 Mechanical Engineering, Field 5 Technical Sciences.

**AIMS AND OBJECTIVES OF THE COURSE:** At the end of the course the students are expected to be able to know unconventional materials processing technologies that use a specific type of energy (electrical, thermal, chemical, electromagnetic). The subject acquires skills for designing operations and implementing them in production conditions.

**DESCRIPTION OF THE COURSE:** The main topics concern: Nature, characteristics and classification of unconventional technologies; Electrical discharge machining treatment; Laser processing; Electron beam processing; Plasma treatment; Ultrasonic treatment; Magnetic processing; Electrochemical anode treatment; Electrochemical cathode treatment; Combined technologies.

**PREREQUISITES:** Physics, Chemistry, Electrical and Electronics.

**TEACHING METHODS:** Lectures, using slides, case studies, seminars, protocols.

**METHOD OF ASSESSMENT:** Two one-hour assessments at mid and end of semester (82%), seminars (18%).

**INSTRUCTION LANGUAGE:** Bulgarian

**BIBLIOGRAPHY:** 1. Кузманов, Т., Хр. Метев. Електрофизични и електрохимични технологии за обработване в машиностроенето. Габрово, ЕКС-ПРЕС-Габрово, 2009; 2. Кузманов, Т., Хр. Метев, Парашкевов С. Електрофизични и електрохимични технологии в машиностроенето, “ЕКС-ПРЕС” ООД – Габрово, 2005; 3. Кузманов, Т., Хр. Метев. Неконвенционални технологии (ръководство за лабораторни упражнения), “ЕКС-ПРЕС” ООД – Габрово, 2005; 4. Георгиев, А. “Електрофизични и електрохимични технологии в машиностроенето”, ТУ – София, 1994; 5. “Справочник по електрохимическим и електрофизическим методам обработки”, под ред. Волосатова В. А., Машиностроение, Л., 1988; 6. Dhiwar, H. Optimization of Process Parameters of Electrochemical Machining. International Journal of Engineering and Management Research, ISSN 2394-6962, VOL.7, 2017.

## DESCRIPTION OF THE COURSE

Name of the course <b>Manufacturing materials technology</b>	Code: <b>BpMTT06</b>	Semester: <b>5</b>
Type of teaching: Lectures, (L) Laboratory work (LW)/Seminars work (SW)	Hours per semester: L – 15 hours LW – 10 hours SW – 10 hours	Number of credits: <b>5</b>

### LECTURER:

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**COURSE STATUS IN THE CURRICULUM:** Compulsory subject from the curriculum for training of students to obtain Bachelor's degree, specialty Mechanical Engineering and Technologies, Professional orientation 5.1 Mechanical Engineering, Field 5 Technical Sciences.

**AIMS AND OBJECTIVES OF THE COURSE:** To show students the relationship between the properties of materials and methods of processing; to provide a broad base of knowledge of the technological processes required in the design, manufacture and testing of workpieces, parts and machines.

**DESCRIPTION OF THE COURSE:** Main topics: extraction of cast iron and steel; melting and out-of-furnace processing of steel; casting; molding materials; molding; casting of cast iron, steel and Al-alloys; casting in metal and shell molds, with molten models, under pressure; preparation of amorphous alloys and semi-finished products; guidelines for construction of castings; plastic deformation treatment; rolling; pressing; free forging; stamping; welding, surfacing, soldering, gluing; electric arc welding; welded joints and seams; electron beam and laser processing; electric resistance welding; thermal cutting; powder metallurgy; receipt of plastic products; preparation of products from composite materials with polymer, metal and ceramic matrix.

**PREREQUISITES:** Physics, Chemistry, Materials Science and Technology of Materials – Part I.

**TEACHING METHODS:** Lectures and laboratory work visualized by slides, tabloids, foil and samples.

**METHOD OF ASSESSMENT:** Three marks of short test-papers in the beginning, the middle and the end of the semester (20%), laboratory work (20%), written examination (60%).

**INSTRUCTION LANGUAGE:** Bulgarian.

**BIBLIOGRAPHY:** 1. Желев, А., Христов, Ст. Заварени конструкции, т.1., С., Техника, 1988; 2. Желев, А., Коларов, И. Заварени конструкции, т.2., С., Техника, 1993; 3. Желев, А., Костадинов, Й. Заварени конструкции, т.3., С., Техника, 1989; 4. Справочник по заваряване, в 2 тома, под ред. на чл. кор. Л. Калев, С., Техника, 1982; 5. Лолов, Н. Заваряемост на материалите, ТУ София, 1995; 6. Винокуров, В., Куркин, С., Николаев, Г. Сварные конструкции. Механика разрушения и критерии работоспособности, Москва, Машиностроение, 1996; 7. Dilthey, U. Schweißtechnische Fertigungsverfahren: Bd. 3 Gestaltung und Festigkeit von Schweißkonstruktionen, Springer Verlag, Berlin, 2002; 8. Dilthey, U. Fügen zukunftsweisender Werkstoffe, Aachen, 1999; 9. Neumann. A. Schweißtechnisches Handbuch für Konstrukteure, in 4 Bänden, 1984.

## DESCRIPTION OF THE COURSE

Name of the course: <b>Sport</b>	Code: <b>FaSPR05</b>	Semester: <b>5</b>
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: <b>1</b>
Course project (CP)	Code: -	Number of credits: <b>0</b>

### LECTURER(S):

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

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

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Technical University of Sofia

**COURSE STATUS IN THE CURRICULUM:** Facultative subject from the curriculum / curricula for training of student to obtain Bachelor's degree, specialty „Mechanical engineering and technologies“, Professional orientation 5.1 Mechanical 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. Туризм и ориентиране. Методическо ръководство за студентите от ТУ София, филиал Пловдив. Издателство на ТУ - София. 2010.

## COURSE DESCRIPTION

Course Title: <b>English for specific purposes</b>	Code: FaBpMTT01	Semester: 5
Type of Teaching: Seminars (S)	Contact hours per semester: S – 15 hours	Number of credits: 2

**LECTURERS:**

Sen. Lect. Konstantina Nyagolova (FME)

Sen. Lect. Nadya Popova (FME)

Sen. Lect. Anet Arabadjieva (FME)

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Technical University of Sofia

**COURSE STATUS IN THE CURRICULUM:** Facultative subject from the curriculum / curricula for training of student to obtain Bachelor's degree, specialty „Mechanical engineering and technologies“, Professional orientation 5.1 Mechanical engineering, Professional field 5 Technical Sciences.

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

**COURSE DESCRIPTION:** The course is taught at language levels determined through placement tests, based on the compulsory foreign language course taken in Year 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' major subject Mechanical Engineering Equipment and Technologies.

**PREREQUISITES:** Completed compulsory foreign language course **LNG01** and **LNG02** in Year 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 course.

**LANGUAGE OF INSTRUCTION:** English

**LITERATURE RECOMMENDED:** 1. Technical English, Pearson Longman; 2. Technical English for Professionals, Mark Ibbotson, Oxford University Press; 3. Flash on English for Mechanics, Electronics and Technical Assistance, Sabrina Sopranzi; 4. Career Paths: Engineering, Charles Lloyd, James A. Frazier - Jr MS, Express publishing, 5. Career Paths: Engineering, Charles Lloyd, James A. Frazier - Jr MS, Express publishing.

## DESCRIPTION OF THE COURSE

Name of the course <b>Technology of Machine Building</b>	Code: <b>BpMTT08</b>	Semester: 6
Type of teaching: Lectures, (L) Laboratory work (LW)/Seminars (S)	Hours per semester: L – 25 hours LW – 15 hours	Number of credits: 5

### **LECTURER:**

Assoc. Prof. Angel Lengerov PhD, Eng. (FME), tel: 659 613; e-mail: [anlengerov@abv.bg](mailto:anlengerov@abv.bg),  
Technical University of Sofia

**COURSE STATUS IN THE CURRICULUM:** Compulsory subject from the curriculum for training of students to obtain Bachelor's degree, specialty Mechanical Engineering and Technologies, Professional orientation 5.1 Mechanical Engineering, Field 5 Technical Sciences.

**AIMS AND OBJECTIVES OF THE COURSE:** After completing the course, the students should know the basic principles of providing machine-building articles quality in the process of their production, the factors that influence quality and the technological properties of the methods of mechanical processing, as well as to be able to make analysis of the technological processes condition and of the quality disturbance sources.

**DESCRIPTION OF THE COURSE:** Basic topics: Production and technological process, types of machine-building production, production organization forms; quality of the articles; precision of the machine-building articles, types of mistakes and methods of ensuring precision; stability of the technological system and methods of reducing the power distortion mistakes; dimension set-up and sub-adjustment of the technological system; ensuring the quality of the processed surfaces; statistical analysis and technological processes control; active and adaptive control; methods of rough, pure and finishing processing; designing technological processes.

**PREREQUISITES:** Materials Science and Technology of Materials; Metrology and Measuring Equipment; Metals Cutting; Cutting Tools; Metal-cutting Machines.

**TEACHING METHODS:** Lectures supported by slides, laboratory work with written statements about the research (observations) results.

**METHOD OF ASSESSMENT:** Written examination on a topic, drawn by the student, or examination test covering the whole content of the subject.

**INSTRUCTION LANGUAGE:** Bulgarian.

**BIBLIOGRAPHY:** 1.Георгиев В., Ст. Пашов. Технология на машиностроенето, ТУ-София, Филиал Пловдив, 2003. ISBN 954-8779-51-X; 2.Пашов Ст., П. Хаджийски. Технология на машиностроенето част 1. ИПК ТУ - София, 1997. ISBN 954-438-203-8; 3.Гатев Г.К., В.И. Георгиев. Ръководство за лабораторни упражнения по технология на машиностроенето, София, "Техника", 1987.

## DESCRIPTION OF THE COURSE

Name of the course <b>Drive and management of Production Equipment</b>	Code: <b>BpMTT09</b>	Semester: <b>6</b>
Type of teaching: Lectures, (L) Laboratory work (LW)/Seminars (S)	Hours per semester: L – 15 hours LW – 15 hours	Number of credits: <b>5</b>

### LECTURER:

Assoc. Prof. Dr. Ilija Chetrokov, Eng. (FME), tel: 659 614, e-mail: [chetrokov@tu-plovdiv.bg](mailto:chetrokov@tu-plovdiv.bg),  
Technical University of Sofia

**COURSE STATUS IN THE CURRICULUM:** Compulsory subject from the curriculum for training of students to obtain Bachelor's degree, specialty Mechanical Engineering and Technologies, Professional orientation 5.1 Mechanical Engineering, Field 5 Technical Sciences.

**AIMS AND OBJECTIVES OF THE COURSE:** To introduce the students to the basic concepts applied to manage the metal processing production equipment: types of management – hard, kinematics, digital; systems for automated programming of lathe, mill, fibre erosion machines and TLU.

**DESCRIPTION OF THE COURSE:** The subject is intended to give basic knowledge of the technological properties, the applicability, the structure, the constructive and kinematics characteristics and the management of various kinds of metal cutting machines with digital program control. Basic topics are: General description of metal cutting machines with CNC; Programming the moves of the working bodies of lathe machines with the ZIT500T system, of mill machines with the FANUK 6MB system; Principles of programming fibre erosion machines and laser mounting for cutting out; Introduction to the systems for automated programming of metal cutting machines with CNC - Surfcam and Unigraphics.

**PREREQUISITES:** Technology of Machine building, Metals Cutting, Metal Cutting Instruments, Technological Equipment.

**TEACHING METHODS:** Lectures illustrated by slides, tabloids and laboratory work with written statements about the results from the researches (the adjustment) of the widely used metal cutting machines with CNC, that are available in the laboratory of the Department of Machine Building Technics and Technologies.

**METHOD OF ASSESSMENT:** Written examination on topics drawn by the student and a specific technological task.

**INSTRUCTION LANGUAGE:** Bulgarian.

**BIBLIOGRAPHY:** 1. Караколов Л. Металорежещи автомати, С., Техника, 1978; 2. Караколов Л. Металорежещи машини и автоматизирани системи с ПУ, С., Техника, 1990; 3. Караколов Л. Настройване на металорежещи машини с ПУ, С., Техника, 1989.

## DESCRIPTION OF THE COURSE

Name of the course: <b>Metrology and measuring equipment</b>	Code: <b>BpMTT10</b>	Semester: 5
Type of teaching: Lectures (L) Laboratory work (LW)	Hours per semester: L – 15 hours LW – 10 hours	Number of credits: <b>5</b>

### **LECTURER(S):**

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Assist. Prof. Eng. K. Georgiev, department pHD (FME), e-mail: [k.georgiev@tu-plovdiv.bg](mailto:k.georgiev@tu-plovdiv.bg),  
Technical University of Sofia

**COURSE STATUS IN THE CURRICULUM:** Compulsory subject from the curriculum for training of students to obtain Bachelor's degree, specialty Mechanical Engineering and Technologies, Professional orientation 5.1 Mechanical Engineering, Field 5 Technical Sciences.

**AIMS AND OBJECTIVES OF THE COURSE:** The aim of the training is for students to acquire theoretical and applied knowledge in metrology and measurement techniques and to acquire skills for solving applied problems.

**DESCRIPTION OF THE COURSE:** The curriculum includes lectures, laboratory work and course work. The basics of metrology, analysis and evaluation of measurement errors, metrological characteristics and application of measuring instruments are considered. The principles for defining and standardizing the requirements for the accuracy of the details, their interchangeability, as well as the modern concepts for analysis and solving problems of dimensional analysis. In the laboratory exercises practical skills for working with measuring instruments and solving applied problems by choosing assemblies and dimensional circuits are acquired.

**PREREQUISITES:** Knowledge of "Mathematics", "Physics", "Electrical Engineering", "Engineering Graphics", "Machine Elements", "Mechanical Engineering Technology" is required.

**TEACHING METHODS:** Lectures delivered with the help of visual presentations, slides and videos. Laboratory exercises with the use of stands, methodical instructions and drawing up protocols. Work with various devices for technical measurements, performance of independent tasks, independent solution of applied course tasks from dimensional analysis.

**METHOD OF ASSESSMENT:** Exam in the form of a test, forming 70% of the total grade, laboratory exercises - 20%, course assignment - 10%.

**INSTRUCTION LANGUAGE:** Bulgarian

**BIBLIOGRAPHY:** 1. Радев Хр. и др., Метрология и измервателна техника (в три тома), С., Софттейд, 2008,2010; 2. Харт Х. Въведение в измервателната техника, С. Техника, 1982; 3. Димитров Д., Взаимозаменяемост, стандартизация и технически измервания, С. Техника, 1982; 4. Радев Хр., Уреди за измерване на линейни и ъглови размери, С., Техника 1989; 5. Димитров Д. и др., Ръководство за лабораторни упражнения по взаимозаменяемост и технически измервания. С., Техника, 1989; 6. Яръмов К., Р. Йорданов, Ръководство за решаване на курсови задачи по взаимозаменяемост, С., Софттрейд,

## DESCRIPTION OF THE COURSE

Name of the course <b>Processing cloak Forming</b>	Code: <b>BMTT11</b>	Semester: 6
Type of teaching: Lectures, (L) Laboratory work (LW)/Seminars (S)	Hours per semester: L – 15 hours LW – 10 hours	Number of credits: <b>5</b>

### **LECTURER:**

Assoc. Prof. Boyan Dochev, PhD (FME), tel.: 659 623, e-mail: [dochev@tu-plovdiv.bg](mailto:dochev@tu-plovdiv.bg)  
Technical University of Sofia

**COURSE STATUS IN THE CURRICULUM:** Compulsory subject from the curriculum for training of students to obtain Bachelor's degree, specialty Mechanical Engineering and Technologies, Professional orientation 5.1 Mechanical Engineering, Field 5 Technical Sciences.

**AIMS AND OBJECTIVES OF THE COURSE:** The study of the topics of the curriculum aims at presenting theoretical knowledge and skills to analyze the technological opportunities of the operations and the principle concepts concerning the design of the basic processes of metal treatment by plastic distortion.

**DESCRIPTION OF THE COURSE:** Basic topics: tension and distortion condition during plastic distortion; Contact friction during plastic distortion; Metals conduct during plastic distortion; Methods of defining the force and the work for plastic distortion; Technological processes for producing articles by plastic distortion; Longitudinal stretch; Pressing; Orifice extension; Machine forging; Open and closed printing with efflux; Dividing operations of sheet printing; Bending sheet material; Deep extension with and without diminishing; Reducing and expansion of tube bodies; Borting.

**PREREQUISITES:** Required knowledge in Mathematics, Resistance of materials, Technology of materials, Materials science.

**TEACHING METHODS:** Lectures and laboratory work, with written statements about the research results.

**METHOD OF ASSESSMENT:** Written examination.

**INSTRUCTION LANGUAGE:** Bulgarian.

**BIBLIOGRAPHY:** 1. Цанков Ц. И, Г. Попов, Г. Пецов. Обработване на металите чрез пластична деформация, С., Техника, 1995. 2. Кючюков Й. Обработване на металите чрез пластична деформация, С., Техника, 1971. 3. Джонсон У., Меллор П. Теория пластичности для инженеров, М., Машиностроение, 1979. 4. Губкин С.И., Пластическая деформация металлов, т.1,2,3., М., Машиностроение, 1960. 5. Сторожев М. В., Попов Е. А. Теория обработки металлов давлением, М., Машиностроение, 1977. 6. Бэкофен Б. Вопросы деформации, М., Металургия, 1977.

## DESCRIPTION OF THE COURSE

Name of the course: <b>Technical Safety</b>	Code: <b>BpMTT12</b>	Semester: <b>6</b>
Type of teaching: Lectures (L) Laboratory work (LW)/Seminars (S)	Hours per semester: L – 15 hours S – 10 hours LW – 0 hours	Number of credits: <b>4</b>

### **LECTURER(S):**

Assoc. Prof. Eng. Stanimir Stefanov, PhD (FEA), tel.: 032659512, e-mail: [glasst@tu-plovdiv.bg](mailto:glasst@tu-plovdiv.bg) Assoc. prof. eng. Marin Genchev, PhD, tel.: 032659512, email: [marin2g@tu-plovdiv.bg](mailto:marin2g@tu-plovdiv.bg)

Technical University of Sofia

**COURSE STATUS IN THE CURRICULUM:** Compulsory subject from the curriculum for training of students to obtain Bachelor's degree, specialty Mechanical Engineering and Technologies, Professional orientation 5.1 Mechanical Engineering, Field 5 Technical Sciences.

**AIMS AND OBJECTIVES OF THE COURSE:** The objective of the course is to familiarize students with standardization practices and the permissible values and parameters of harmful and hazardous impacts, as well as the methods for their control and protective measures.

**DESCRIPTION OF THE COURSE:** The study of this course enriches students' knowledge in the field of occupational safety. The course aids students in their preparation to master the methodological fundamentals of occupational safety.

**PREREQUISITES:** The course of lectures and exercises is based on students' knowledge of "Physics," "Mathematics," and "Chemistry".

**TEACHING METHODS:** Lectures using presentations and visual materials. Seminar exercises conducted according to a study guide under the instructor's supervision.

**METHOD OF ASSESSMENT:** Current assessment at the end of the semester. The current assessment is conducted according to a schedule coordinated with the students and approved by the Academic Office of TU-Sofia, Plovdiv Branch.

**INSTRUCTION LANGUAGE:** Bulgarian

**BIBLIOGRAPHY:** 1. Анев Г., Стоянов Ст., Електрически системи – заземление, защита, безопасност, ABC Техника, София, 2004; 2. Ушев Г., Йорданова М., Техническа безопасност, Бряг Принт ООД, Варна, 2003; 3. Анев Г., Коларов Д., Електробезопасност при напряжения над 1000V, Лот-Консулт, София, 2000

## DESCRIPTION OF THE COURSE

Name of the course <b>Special Methods of Casting</b>	Code: <b>BpMTT13.1</b>	Semester: 6
Type of teaching: Lectures, (L) Seminars (S)	Hours per semester: L – 15 hours S – 10 hours	Number of credits: 4
Course project (CP)	Code: <b>BpMTT14</b>	Number of credits: 2

### ЛЕКТОР:

Assoc. Prof. Boyan Dochev PhD (FME), tel.: 659 623, e-mail: [dochev@tu-plovdiv.bg](mailto:dochev@tu-plovdiv.bg)  
Technical University of Sofia

**COURSE STATUS IN THE CURRICULUM:** Elective subject from the curriculum for training of students to obtain Bachelor's degree, specialty Mechanical Engineering and Technologies, Professional orientation 5.1 Mechanical Engineering, Field 5 Technical Sciences.

**AIMS AND OBJECTIVES OF THE COURSE:** To introduce the students to the theoretical fundamentals, technological processes, the means of mechanization and automation, and the special methods of casting.

**DESCRIPTION OF THE COURSE:** The basic problems of casting in shell moulds, metal moulds (chill moulds), pressure casting, casting under low pressure and counter-pressure, centrifugal casting and casting in melting moulds and other models. The principle schemes of continuous casting, casting under compression, super-cooling casting, vacuum casting and pressure casting with crystallization.

**PREREQUISITES:** Required knowledge in the fundamental and general engineering training, as well as in the special technological training in Materials Science – part II and Technology of Casting production.

**TEACHING METHODS:** Lectures visualized by slides, laboratory work with written statements.

**METHOD OF ASSESSMENT:** Written examination and discussion.

**INSTRUCTION LANGUAGE:** Bulgarian.

**BIBLIOGRAPHY:** 1. Ефимова В. А. Специальные способы литья, Москва, Машиностроение, 1991; 2. Белопухов А.К. Технологические режимы литья под давлением, Москва, Машиностроение, 1985 ; 3. Степанов Ю. А. и др. Специальные виды литья, Москва, Машиностроение, 1970.

## DESCRIPTION OF THE COURSE

Name of the course <b>Metal Cutting Machines – Part II</b>	Code: <b>BpMTT13.2</b>	Semester: <b>6</b>
Type of teaching: Lectures, (L) Laboratory work (LW)/Seminars (S)	Hours per semester: L – 15 hours S – 10 hours	Number of credits: <b>4</b>
Course project	Code: <b>BpMTT14</b>	Number of credits: <b>2</b>

### LECTURER:

Assist. Prof. Sabi Sabev, PhD (FME),  
tel: 659 614, e-mail: [sabi\\_sabev@tu-plovdiv.bg](mailto:sabi_sabev@tu-plovdiv.bg) ,

Technical University of Sofia

**COURSE STATUS IN THE CURRICULUM:** Elective subject from the curriculum for training of students to obtain Bachelor's degree, specialty Mechanical Engineering and Technologies, Professional orientation 5.1 Mechanical Engineering, Field 5 Technical Sciences.

**AIMS AND OBJECTIVES OF THE COURSE:** The subject aims at introducing the students to the kinematics and strength calculations of transfers and assemblies of metal cutting machines. The students need this knowledge to work out the thesis and the graduation design.

**DESCRIPTION OF THE COURSE:** The curriculum of the subject consists basically of two chapters: kinematics calculations of metal cutting machines and strength calculations of the elements and joints of metal cutting machines. The kinematics calculations treat the types of transfers, the arrangement of the frequencies of rotation in the transfers, the kinematics calculations of main and feeding transfer, calculation of the number of cogs of the cogged couples in the groups, non-stage transfers. The strength calculations treat questions concerning the purpose, the requirements, the production materials, the construction arrangement, the types and the calculation of body details, the guides, the spindle assemblies and the traction devices of metal cutting machines. The questions connected with the constructive forming of the assemblies are discussed taking into consideration the static, dynamic and heat behaviour of the machines. The strength calculations and the optimizations of the assemblies are presented using the method of the final elements.

**PREREQUISITES:** Metal elements, Mechanics, Metal cutting machines – part I, Cutting of materials, Cutting tools.

**TEACHING METHODS:** Lectures supported by slides, tabloids and laboratory work with written statement about the research results.

**METHOD OF ASSESSMENT:** Written examination on topics, drawn by the student.

**INSTRUCTION LANGUAGE:** Bulgarian.

**BIBLIOGRAPHY:** 1. Радев В., Конструирание на металорежещи машини. С., Техника, 1968; 2. Проников А. С. и др. Металорежущие станки. М., Машиностроение, 1981; 3. Пуш В.Э. и др. Металорежущие станки. М., Машиностроение, 1985; 4. Попов Г. Т. Металорежещи машини част II. С., ПБТУ-София, 1994; 5. Любенов А., С. Сяров, П. Петков. Ръководство за лабораторни упражнения по металорежещи машини. С., Техника, 1984; 6. Мишев Г. А. Металорежещи машини част II. Пловдив, ПБТУ – София, филиал Пловдив, 2000.

## DESCRIPTION OF THE COURSE

Name of the course: <b>Sport</b>	Code: <b>FaSPR06</b>	Semester: <b>6</b>
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: <b>1</b>
Course project (CP)	Code: -	Number of credits: <b>0</b>

### LECTURER(S):

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

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

Sen. Lect. Boris Spasov, PhD (FEA), E-mail: [boris\\_spasov@tu-plovdiv.bg](mailto:boris_spasov@tu-plovdiv.bg)

Technical University of Sofia

**COURSE STATUS IN THE CURRICULUM:** Facultative subject from the curriculum / curricula for training of students to obtain Bachelor's degree, specialty „Mechanical engineering and technologies“, Professional orientation 5.1 Mechanical 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. Туризм и ориентиране. Методическо ръководство за студентите от ТУ София, филиал Пловдив. Издателство на ТУ - София. 2010.

## DESCRIPTION OF THE COURSE

Name of the course: <b>Project Management</b>	Code: <b>FaBpMTT02</b>	Semester: 6
Type of teaching: Lectures(L) Laboratory work (LW)	Hours per semester: L – 10 hours LW – 15 hours	Number of credits: <b>3</b>

### **LECTURER(S):**

Prof. Toni Mihova, PhD (FME), tel.: 659 XXXX, e-mail: @ tu-plovdiv.bg  
Assoc. Prof. Professor Georgi Georgiev, PhD (FME), tel. 659 706, email: [georgi@tu-plovdiv.bg](mailto:georgi@tu-plovdiv.bg)  
Technical University of Sofia

**COURSE STATUS IN THE CURRICULUM:** Facultative subject from the curricula for training of students to obtain Bachelor's degree, specialties Mechanical and Instrument Engineering, Mechatronics, Mechanical and Instrument Engineering, Professional orientation 5.1 Mechanical Engineering, Electronics and Automation, Field 5 Technical Sciences.

**AIMS AND OBJECTIVES OF THE COURSE:** Upon completion students will have basic knowledge of the Project Management processes and will acquire skills for identifying project ideas and turning them into project proposals of different forms.

**DESCRIPTION OF THE COURSE:** The course is focused on identifying project ideas and turning them into project proposals. Main topics are: Definitions of Project management, Projects and types of projects; The project as an instrument for meeting organizational needs and attracting funding; Methods and techniques for project development; Main elements of the project cycle and the project proposal; Developing project activities and identifying necessary resources; Project budgeting; Project implementation and management; Project teambuilding.

**PREREQUISITES:**none.

**TEACHING METHODS:** Lectures with slides and topic discussions; lab work including group case study discussions and an individual assignment with a Powerpoint presentation defense.

**METHOD OF ASSESSMENT:** Final written exam (60%) and individual assignment defense(40%).

**INSTRUCTION LANGUAGE:** English

**BIBLIOGRAPHY:**1. Adrienne Watt, Project Management, Victoria, B.C.: BCcampus., 2014. ISBN 978-1-77420-012-4; 2. A Guide to the Project Management Body of Knowledge (PMBOK Guide), Sixth Edition 2017, ISBN: 978-1-62825-390-0; 3. Stephen Barker and Rob Cole, Brilliant Project Management: What the best project managers know, do, and say; Pearson 2014 , ISBN 9780273775096; 4. Joseph Heagney, Fundamentals of Project Management, Fourth Edition; 2012 American Management Association, ISBN-13: 978-0-8144-1748-5; 5. Lee A. Swanson, Business Plan Development Guide, Saskatoon, Saskatchewan 2017, ISBN 978-0-88880-618-5; 6. Владимир Иванов,. „Ръководство за подготвяне на бизнес план“ на Център по предприемачество към Технически университет – София, филиал Пловдив, 2010.