DESCRIPTION OF THE COURSE

Name of the course: Metrology and measuring equipment	Code: **BpAT01**	Semester: **5**
Type of teaching: Lectures (L) Laboratory work (LW))	Hours per semester: L –15 hours LW – 10 hours	Number of credits: **5**

LECTURER(S):
Accos. Prof. Pavlinka Katsarova, PhD (FME), tel.: 659 636, e-mail: p.kacarova@tu-plovdiv.bg
Assist. Prof. Kliment Georgiev, PhD (FME), tel.: 659 636, e-mail: 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 Autotransport Machinery, 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 main topics concern: 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: Mathematics, Physics, Electrical Engineering and Electronics, Engineering Graphics, Machine Elements.

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 80% of the total grade, laboratory exercises - 20%.

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: **Logistics equipment**	Code: **BpAT02**	Semester: **5**
Type of teaching: Lectures (L) Laboratory work (LW)/Seminars (S)	Hours per semester: L – 15 hours LW – 15 hours S – 0 hours	Number of credits: **5**

LECTURER(S):
Assoc. Prof. Eng. Silviya Salapateva, PhD (FME), tel.: 032 659613, e-mail: sisisal@tu-plovdiv.bg
Technical University of Sofia

COURSE STATUS IN THE CURRICULUM: Compulsory from the curriculum training of students to obtain Bachelor's degree, specialty Autotransport machinery, Professional orientation 5.1 Mechanical engineering, Field 5 Technical Sciences.

AIMS AND OBJECTIVES OF THE COURSE: Students will study and be able to apply the approaches, methods and technical means for developing and implementing logistics methods for analysis, evaluation and generation of final solutions necessary for the design, research, evaluation and management of loading and unloading and warehousing technologies and equipment applied in logistics complexes.

DESCRIPTION OF THE COURSE: Delivery processes. Transport chains. Cargo and packaging - types and characteristics. Pallet and package system. Container transport and manipulation system. Technical characteristics and operating technologies of homogeneous and heterogeneous roller conveyor systems. Control and management of systems - broadcasting and counting devices, address coding. Technological solutions for the development and application of robocarts in logistics systems. Automated high-bay warehouses and warehouse technologies. Transport and distribution systems (TRS) - types, selection and calculation criteria. Technologies and systems for picking - types, characteristics. Picking systems with static and dynamic preparation - types, parameters and characteristics. Picking systems with dynamic preparation - parameters, characteristics, technologies. Macro-logistics transport systems. Transport infrastructure. Transport terminals. Warehouse equipment.

PREREQUISITES: Technology and organization of road transport.

TEACHING METHODS: Lectures using presentations and demonstration materials, and the results of laboratory exercises are documented in protocols.

METHOD OF ASSESSMENT: Written exam at the end of the semester (80%), laboratories (20%).

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY:
1. Казаков Н., Логистика. С. Софтрейд.2000; 2. Македонска Д., Н. Казаков, Основи на логистиката, С. Транслогистик, 2001; 3. Schniederjans M., Topics in Just-in Time Management, Nebraska, Allyn and Bacon, 1993; 4. Jessop D., Sloruge and Supply of Materials.London, Pitman,1991; 5. Burton J., Effective Warehousing, Plymout, Macdonald and Evans, 1981; 6. Lambert D., J. Stock, Fundamental of Logistics Management, Boston, Irwin, l998; 7.Christopher M., Logistics- the strategic issues, London, Chapman Hall, 2002; 8. Farahani R., S. Rezapour, L. Kardar, Logistics Operations and Management, Elsevier, 2011; 9. Hiel M., H. Aldewereld, F. Dignum, Modeling Warehouse Logistics Using Agent Organizations, Springer, 2011.

DESCRIPTION OF THE COURSE

Name of the course: **Theory of Automobile**	Code: **BpAT03**	Semester: **5**
Type of teaching: Lectures (L) Laboratory work (LW)/ Tutorials (T)	Hours per semester: L – 15 hours T – 10 hours LW – 15 hours	Number of credits: **6**

LECTURER(S):
Assoc. Prof. Eng. Krasimir Ambarev, PhD (FME), tel.: 659 521, e-mail:kambarev@tu-plovdiv.bg
Assist. Prof. Eng. Stiliyana Taneva, PhD (FME), tel.: 659 524, e-mail: s.taneva@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 Autotransport Machinery, 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 topics related to operating characteristics of the automobile, directly linked to his movement, power and torque on the driving wheels, interaction between wheels and road, traction performance, braking performance, handling, stability, cross-country ability and fuel effectiveness of the automobile.

DESCRIPTION OF THE COURSE: The main topics concern: Transmission of engine power to the driving wheels of the automobile; Interaction between wheels and road; Driving resistances on the automobile; Methods for calculating dynamic verification; Stability and handling; Opportunities for operating in off-road conditions; Fuel effectiveness of automobile; Influence of construction and operational factors on the dynamic properties of the automobile.

PREREQUISITES: Mathematics, Physics, Mechanics I and II

TEACHING METHODS: Lectures, using slides, seminars and laboratory work with protocols.

METHOD OF ASSESSMENT: Exam at end of semester (80%), laboratories (20%).

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY: 1. Любенов С С., Б. Ангелов, Ив. Евтимов Автомобили и трактори. Експлоатационни свойства, Русе, 2004; 2. Семов Д., Н. Иванов, Д. Лозанов, Автомобили, трактори и кари, София, Техника, 1992; 3. Нейков С. А., Д. А. Кацов, П. И. Йорданов, С. И. Пенчев. Автомобилна техника I част. Ръководство за лабораторни упражнения. Пловдив, 2006; 4. Литвинов А. С., Я. Е. Фаробин. Автомобиль. Теория эксплуатационных свойств. Москва, „Машиностроение”, 1989; 5. Meywerk M. Vehicle Dynamics, Automotive Series, John Wiley&Sons Ltd., 2015; 6. Rill G. Road vehicle dynamics: Fundamental and Modeling, Taylor & Francis Group, ISBN – 13: 978-1-4398-9744-7, 2012 ; 7. Wong J. Y. Theory of ground vehicles, Third edition, New York, ISBN 0-471-35461-9, 2001.

DESCRIPTION OF THE COURSE

Name of the course: **Technology and Organization of Road Transport**	Code: **BpAT04**	Semester: **5**
Type of teaching: Lectures (L) Laboratory work (LW)/Seminars (S)	Hours per semester: L – 15 hours LW – 10 hours S – 0 hours	Number of credits: **5**

LECTURER(S):
Assoc. Prof. Eng. Silviya Salapateva, PhD (FME), tel.: 032 659613, e-mail: sisisal@tu-plovdiv.bg
Technical University of Sofia

COURSE STATUS IN THE CURRICULUM: Compulsory from the curriculum training of students to obtain Bachelor's degree, specialty Autotransport machinery, Professional orientation 5.1 Mechanical engineering, Field 5 Technical Sciences.

AIMS AND OBJECTIVES OF THE COURSE: Aim of the course is to make students familiar with discovery and management of the basic regular connections between qualities of the vehicles, parameters of the transportation process and efficacy and safety of automotive transportations.

DESCRIPTION OF THE COURSE: The course includes general description of methodical, technological and organizational parameters of the automotive transport activity. They are concerned to the grounds of choosing the right type of vehicles, organization of transportation along different directions, appraisal and analysis of the transportation's efficacy. Basic moments of the technology and organization of the urban bus transportations are exposed.

PREREQUISITES: Construction of the car, Construction of internal combustion engines, Loading and unloading processes.

TEACHING METHODS: Lectures using presentations and demonstration materials, and the results of laboratory exercises are formed in protocols.

METHOD OF ASSESSMENT: Written exam at the end of the semester (80%), laboratories (20%).

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY: 1. Пенков, И. К, Основи на автомобилния транспорт. София, Печатна база на ТУ-София, 1997 г.; 2. Враджалиев, И. В. Организация на експлоатацията на транспорта. София, Техника 1985 г.; 3.Пенков И. К., Василев В. И. Ръководство за курсово проектиране по товарни превози. Печатна база на ТУ-София, 1991 г. 4. Афанасиев Л. Л; 4. Горев А.Э. Грузовые автомобильные перевозки, ИД Академия, 2008; 5. Горев А.Э. Организация автомобильных перевозок и безопасность движения - учебное пособие, SBN:978-5-4468-0263-0, Издательство:Академия, 2013.

DESCRIPTION OF THE COURSE

Name of the course: **Automotive expertise**	Code: **BpAT05**	Semester: **5**
Type of teaching: Lectures (L) Laboratory work (LW)/Tutorials (T)	Hours per semester: L – 15 hours T – 10 hours LW – 15 hours	Number of credits: **6**
Course project (CP)	Code: **BpAT06**	Number of credits: **3**

LECTURER(S):
Assist. Prof. Eng. Yordan Stoyanov, PhD (FME), tel.: 032 659626, e-mail: yordan.stoyanov@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 "Autotransport Machinery", Professional orientation 5.1 Mechanical Engineering, Field 5 Technical Sciences.

AIMS AND OBJECTIVES OF THE COURSE: The course purpose in "Automatic expertise" is for students to gain knowledge to draw conclusions for auto technical expertise, by applying modern approaches, methods and methodologies for engineering analysis of traffic accidents, insurance and other events.

DESCRIPTION OF THE COURSE: Modern methods for expert analyses and conclusions of auto experts working as experts are studied in: the investigation, the court cases of serious accidents and the division of property-cars, etc. equipment, and expert assessments of the condition, damage and residual value of means of transport for insurance companies, motor transport companies, motor transport companies and companies selling cars and service facilities. Students become familiar with the main legislative provisions regulating the activities of auto experts. They get to know the modern methods for inspecting the scene of the accident, the cars and studying the process of the accident and the technical possibilities for its prevention

PREREQUISITES: Basic knowledge of mathematics, physics, mechanics, internal combustion engines, automotive technology, transport technology and organization, traffic safety, etc. is required.

TEACHING METHODS: Lectures delivered with the help of visual materials, boards, slides and videos. Laboratory exercises carried out according to a guide and protocols developed by the students and checked by the teacher.

METHOD OF ASSESSMENT: Exam

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY:
Karapetkov, S. Traffic accident investigation. Technical comment of the lawyer. TU - Sofia - 2010; Kolev, N. Road accidents. Sliven, 2021; Matthew Huang .Vehicle Crash Dynamics. Boca Raton London New York Washington, D.C. 2000; Matthew Huang. Vehicle Crash Mechanics. Boca Raton London New York Washington, D.C. 2000

DESCRIPTION OF THE COURSE

Name of the course: **Sport**	Code: **FaSPR05**	Semester: **5**
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**
Course project (CP)	Code: -	Number of credits: **0**

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: Facultative subject from the curriculum / curricula for training of students to obtain Bachelor's degree, specialty „Mechanical and Instrument Engineering“, „Mechatronics“, „Mechanical engineering and technologies“, „Autotransport machinery“, 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. Туризъм и ориентиране. Методическо ръководство за студентите от ТУ София, филиал Пловдив. Издателство на ТУ - София. 2010.

COURSE DESCRIPTION

Course Title: **English for specific purposes**	Code: **FaBpAT01**	Semester: **5**
Type of Teaching: **Seminars (S)**	Contact hours per semester: **S – 15 hours**	Number of credits: **2**

LECTURERS:	**Telephone:**	**E-mail:**
Sen. Lect. Konstantina Nyagolova (FME, English)	0887276513	konstantinanik@yahoo.com
Sen. Lect. Nadya Popova (FME, English)	032 659 707	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

COURSE STATUS IN THE CURRICULUM: Optional course in the curriculum of the ***Bachelor Degree Programme in Autotransport machinery***, Professional qualification 5.1 Mechanical Engeneering, 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 *Automotive Engineering*.

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*

DESCRIPTION OF THE COURSE

Name of the course: **Theory of internal combustion engines**	Code: **BpAT07**	Semester: 6
Type of teaching: Lectures (L) Laboratory work (LW)/Tutorials (T) Course work (CW)	Hours per semester: L – 15 hours T – 10 hours LW – 15 hours	Number of credits: 6

LECTURER(S):
Prof. Eng. Valyo Nikolov, PhD (FMI), tel.: 659594, e-mail: vnikolov@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 "Autotransport Machinery", Professional orientation 5.1 Mechanical Engineering, Field 5 Technical Sciences.

AIMS AND OBJECTIVES OF THE COURSE: The students must to know the basics of ICE theory, mathematical modeling of the process taking place in the engines, the methods of thermal calculations and determination of the basic dimensions, taking their characteristics, etc.

DESCRIPTION OF THE COURSE: The subject acquaints the students with the processes taking place in piston internal combustion engines (ICE), which processes are associated with the transformation of heat energy into mechanical, the ways of their management and possibilities for their improvement. The thermodynamic and actual cycles of piston ICE are reviewed, as well as the indicator and effective factors, the work regimen and their characteristics. The influence of different factors on process flow is analyzed as well as the parameters and indices of petrol and diesel ICE. Attention is given to carburetion, super-filling and toxic substance generation in the cylinder and to such substance concentration in the exhaust gases of ICE and to the ways of their reduction.

PREREQUISITES: Thermal Endineering, Fluid Mechanics, Mechanics and etc.

TEACHING METHODS: Lectures using multimedia, slides and others materials. Laboratory works for which reports are made and the reports are checked by the teacher..

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

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY:
1. Димитров П., Учебник по „Теория на двигателите с вътрешно горене", Издателство на Технически Университет – София, 2000; 2. Маслинков С. и кол., Теория на двигателите с вътрешно горене, Издателство „Техника", София, 1985; 3. Костов В., Николов В., Димитров Е., Амбарев К., Учебник по "Авиационни бутални двигатели", Издателство „Хоризонти", Пловдив, 2014; 4. Димитров, П. И., Ръководство за лабораторни упражнения по „Теория на ДВГ", Технически Университет – София, 1999; 5. Генов, Г. Д. и В. Костов, Ръководство за курсово проектиране на ДВГ, Издателство „Техника", София, 1986; 6. Николов В., Амбарев К., Ръководство за курсова работа по „Теория на ДВГ", "Топлинно изчисляване на ДВГ с интерактивна програмна система". Издателство „Хоризонти", Пловдив, 2014..

DESCRIPTION OF THE COURSE

Name of the course: **Construction of Automobile**	Code: **BpAT08**	Semester: **6**
Type of teaching: Lectures (L) Laboratory work (LW)/ Tutorials (T))	Hours per semester: L – 15 hours T – 10 hours LW – 15 hours	Number of credits: **6**

LECTURER(S):
Prof. Eng. Valyo Nikolov, PhD (FME), tel.: 659 594, e-mail: vnikolov@tu-plovdiv.bg
Assist. Prof. Eng. Stiliyana Taneva, PhD (FME), tel.: 659 524, e-mail: s.taneva@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 Autotransport Machinery, Professional orientation 5.1 Mechanical Engineering, Field 5 Technical Sciences.

AIMS AND OBJECTIVES OF THE COURSE: Aim of the course is to enlarge the knowledge of the students about the constructions, design and construction of units, assemblies and systems of the automobile.

DESCRIPTION OF THE COURSE: The main topics concern: Layout of automobiles; Arrangement of transmissions; Construction, design and calculations of clutches; Layshaft gearboxes; Epicyclic gearboxes; Automatic transmissions; Transfer gearboxes; Propeller shafts and universal joints; Bevel gears; Differentials; Axle shafts and final drive; Axles; Wheels and tires; Brake systems; Steering systems; Suspension; Frame.

PREREQUISITES: Mechanics I and II, Strength of materials, Engineering Graphics, Machine elements, Theory of Mechanisms and Machines, Theory of Automobile, Theory of Internal Combustion Engines

TEACHING METHODS: Lectures, using slides, seminars and laboratory work with protocols.

METHOD OF ASSESSMENT: Written exam at end of semester (80%), laboratories (20%).

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY:
1. Кацов Д. А., Димитров Й. Н. Колесни и верижни машини, ТУ-София, филиал Пловдив, 2005; 2. Морчев Е. П. Проектиране и конструиране на автомобила, София, “Техника”, 1991; 3. Кацов Д. А., Петров Ц. Автомобилна техника – II част – ръководство, ТУ-София, филиал Пловдив, 2004; 4. Димитров Й. Н. и др. Ръководство по проектиране, конструиране и изчисляване на автомобила, трактора и кара, София, “Техника”, 1980; 6. Лукин П. П. и др. Конструирование и расчет автомобиля, Москва, “Машиностроение”, 1984. 7. Вахламов В. К. Автомобили. Основы конструкции, учебник для вузов., Транспорт, Москва, 2008; 8. Meywerk M. Vehicle Dynamics, Automotive Series, First Edition, John Wiley&Sons Ltd., 2015.

DESCRIPTION OF THE COURSE

Name of the course: **Theory and Construction of Automobile**	Code: **BpAT09**	Semester: **6**
Type of teaching: Lectures (L) Laboratory work (LW)/ Tutorials (T) Course project (CP)	Hours per semester: L – 0 hours T – 0 hours LW – 0 hours	Number of credits: **3**

LECTURER(S):
Assist. Prof. Eng. Stiliyana Taneva, PhD (FME), tel.: 659 524, e-mail: s.taneva@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 Autotransport Machinery, Professional orientation 5.1 Mechanical Engineering, Field 5 Technical Sciences.

AIMS AND OBJECTIVES OF THE COURSE: Aim of the course is to improve the knowledge of the students of calculating the dynamic properties of the automobile and about design and construction of units, assemblies and systems of the automobile.

DESCRIPTION OF THE COURSE: The main topics concern: Dynamic properties of the automobile. Construction, design and calculations of: Clutches; Layshaft gearboxes; Transfer gearboxes; Propeller shafts and universal joints; Bevel gears; Differentials; Axle shafts and final drive; Axles; Brake systems; Steering systems; Suspension.

PREREQUISITES: Mechanics I and II, Strength of materials, Engineering Graphics, Machine elements, Theory of Mechanisms and Machines, Theory of Internal Combustion Engines, Theory of Automobile, Construction of Automobile

TEACHING METHODS: In the course project, executed in compliance with a manual, the students make design and calculations of assemblies and systems of automobile, using CAD systems.

METHOD OF ASSESSMENT: The course project is assessed separately.

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY:
1. Любенов С С., Б. Ангелов, Ив. Евтимов Автомобили и трактори. Експлоатационни свойства, Русе, 2004; 2. Кацов Д. А., Димитров Й. Н. Колесни и верижни машини, ТУ-София, филиал Пловдив, 2005; 3. Морчев Е. П. Проектиране и конструиране на автомобила, София, “Техника”, 1991; 4. Димитров Й. Н. и др. Ръководство по проектиране, конструиране и изчисляване на автомобила, трактора и кара, София, “Техника”, 1980; 5. Лукин П. П. и др. Конструирование и расчет автомобиля, Москва, “Машиностроение”, 1984. 6. Meywerk M. Vehicle Dynamics, Automotive Series, First Edition, John Wiley&Sons Ltd., 2015.

DESCRIPTION OF THE COURSE

Name of the course: **Organization and traffic safety**	Code: **BpAT10**	Semester: **6**
Type of teaching: Lectures (L) Laboratory work (LW)/Tutorials (T) Course work (CW)	Hours per semester: L – 15 hours T – 10 hours LW – 10 hours	Number of credits: **5**
Course project (CP)	Code:	Number of credits:

LECTURER(S):
Prof. Eng. Valyo Nikolov, PhD (FME), tel.: 659 594, e-mail: vnikolov@tu-plovdiv.bg
Assist. Prof. Eng. Yordan Stoyanov, PhD (FME), tel.: 032 659626, e-mail: yordan.stoyanov@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 "Autotransport Machinery", Professional orientation 5.1 Mechanical Engineering, Field 5 Technical Sciences.

AIMS AND OBJECTIVES OF THE COURSE: The course purpose on "Organization and traffic safety" is to train students in the theory and practical measures to ensure the safety of road traffic.

DESCRIPTION OF THE COURSE: The requirements, methods, measures, and constructive solutions ensuring traffic safety and reducing the harmful effects of road transport are studied. The studied questions are in the scientific fields: psychophysiology of the driver's work, structural safety of the modern car, the road and its facilities, theory of transport flows, organization, regulation and management of transport and pedestrian flows, automated traffic control systems

PREREQUISITES: Basic knowledge of mathematics, physics, mechanics, internal combustion engines, automotive technology, technology and organization of road transport, etc. is required.

TEACHING METHODS: Lectures delivered with the help of visual materials, boards, slides and videos. Coursework for presentation of appropriate measures to increase traffic safety for specific road sections.

METHOD OF ASSESSMENT: Exam

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY: I. Zlatanov. Traffic organization and safety. Technika Sofia. 1985; R. Bayett, R. Watts. Investigation of traffic accidents. Technique. Sofia. 1988; D. Semov, N. Ivanov, D. Lozanov. Cars, tractors and trucks. Technique. Sofia. 1992; A. Pavlov, V. Panchev, H. Zapryanov, H. Bonev, L. Hristov. Safe road traffic. Technique. Sofia. 1991; D. Lyubenov, S. Kostadinov. Traffic safety - manual for exercises, Printing base at RU "A. Kanchev", 2015; Zh. Gelkov, D. Lyubenov. Traffic safety, Printing base at RU "A. Kanchev", 2014; D. Simeonov, V. Pencheva. Interaction of the types of transport, Printing base at RU "A. Kanchev", Ruse, 2001, p. 308.

DESCRIPTION OF THE COURSE

Name of the course: **Electrical equipment in transport**	Code: **BpAT11**	Semester: **6**
Type of teaching: Lectures (L) Laboratory work (LW)/Tutorials (S)	Hours per semester: L – 15 hours T –0 hours LW – 10 hours	Number of credits: **5**

LECTURER(S):
Assoc. Prof. Eng. Nikola Georgiev PhD (FEA), tel.:659592, e-mail: nikola.georgiev@tu-plovdiv.bg
Principal Assistant Eng. Николай Паунков (ФЕА), tel.:659687, e-mail: nick123@tu-plovdiv.bg
Technical University of Sofia

COURSE STATUS IN THE CURRICULUM: Mandatory course from the curricula for training part-time students for the Bachelor's degree in the specialty "Autotransport Machinery", Professional orientation 5.1 Mechanical Engineering, Field 5 Technical Sciences..

AIMS AND OBJECTIVES OF THE COURSE: To give students knowledge in general theory and the basic principles of operation of electrical equipment in transport.

DESCRIPTION OF THE COURSE: Main topics: Voltage regulators, initial start-up systems, electronic ignition systems, measuring instruments and electronic control systems.

PREREQUISITES: The course of lectures and seminars is based on students' knowledge of "Physics", " Electrical Engineering and Electronics".

TEACHING METHODS: Lectures, using slides, case studies, laboratory and course work, work in teams, protocols.

METHOD OF ASSESSMENT: Exam with two questions.

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY: 1. Илиев Л, Б.Трайков, Електрически уредби на автомобилите и тракторите, Техника, София, 1990. 2. Трайков Б. Електроника в автомобила, Техника, София, 1997. 3. Ю.П. Чижков, Электрооборудование автомобилей, Машиностроене, Новосибиркс 2002. 4.Тошков Г. П., 'Електроника', ТУ- Варна, 2005. 5.Erickson R, D. Maksimovic, 'Fundamentals of Power Electronics'KAP, Massachusetts, USA, 2001.

DESCRIPTION OF THE COURSE

Name of the course: **Computer engineering analysis of automotive parts**	Code: **BpAT12**	Semester: **6**
Type of teaching: Lectures (L) Laboratory work (LW) Course work (CW)	Hours per semester: L – 15 hours LW – 15 hours	Number of credits: **5**

LECTURER(S):
Assist. Prof. Eng. Stanimir Penchev, PhD (FME), tel.: 659632, e-mail: spenchev@tu-plovdiv.bg
Assist. Prof. Eng. Stiliyana Taneva, PhD (FME), tel.: 659524, e-mail: s.taneva@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 Autotransport Machinery, Professional orientation 5.1 Mechanical Engineering, Field 5 Technical Sciences.

AIMS AND OBJECTIVES OF THE COURSE: The aim of the course is to enlarge the knowledge of the students about theory and application of Finite Element Method for structural analysis of automotive parts and to gain experience in using finite element software for solutions of static and dynamic problems.

DESCRIPTION OF THE COURSE: The main topics concern: Modelling of structures; Hypothesis and assumptions; Kinds of problems; Fundamentals of FEM - virtual displacements principle, discretization and approximation of unknown functions, element stiffness matrix and load vector, assembling; FEM for trusses and frames - variational formulation, shape functions, element stiffness matrix, problems; Plane problems - interpolation fields for triangle and quadratic elements, isoparametric formulation; Numerical integration; Axisymmetric problems, 3D problems; Modelling, errors and accuracy of FEM solution; Plates and shells - plate-bending theory, displacements, strains and stresses, finite elements for plates; Shells and shell theory - assumptions and hypotheses, displacements, strains and stresses; Shell elements, problems.

PREREQUISITES: Mathematics, Material science, Mechanics, Strength of Materials

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

METHOD OF ASSESSMENT: Two one-hour assessments at mid and end of semester (70%), laboratories (12%), course work - two off assignments (18%).

INSTRUCTION LANGUAGE: Bulgarian

BIBLIOGRAPHY:
1. Ташев М., Йорданов Р., Инженерен анализ с метода на крайните елементи, Екс-Прес, Габрово, 2012, ISBN – 978-954-490-350-3. 2. Максимов Й. Компютърни методи за инженерен анализ, Габрово, 1999. ISBN: 954-683039-9. 3. Стойчев Г. Метод на крайните елементи – якостен и деформационен анализ, София, 2000., ISBN – 978-954-490-350-3. 4. Bathe, K. J. Finite Element Procedures, second edition, ISBN-10: 0979004950, ISBN-13: 978-0979004957, 2014. 5. Zienkiewicz, O. C., Taylor, R. L., Zhu, J.Z., The Finite Element Method: Its Basis and Fundamentals, 7th Edition, eBook ISBN: 9780080951355, Hardcover ISBN: 9781856176330, Butterworth-Heinemann, 2013.

DESCRIPTION OF THE COURSE

Name of the course: **Sport**	Code: **FaSPR06**	Semester: **6**
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**
Course project (CP)	Code: -	Number of credits: **0**

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: Facultative subject from the curriculum / curricula for training of students to obtain Bachelor's degree, specialty „Mechanical and Instrument Engineering“, „Mechatronics“, „Mechanical engineering and technologies“, „Autotransport machinery“, 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. Туризъм и ориентиране. Методическо ръководство за студентите от ТУ София, филиал Пловдив. Издателство на ТУ - София. 2010.