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**Curriculum**

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| --- | --- |
| **Program** | Bachelor program - **Vehicles and Vehicle Fleet**  |
| **Degree awarded** | **Bachelor of Engineering Science in Transportation** |
| **Faculty**  | **Faculty of Technical Engineering** |
| **Program coordinator/coordinators** | Gocha Lekveishvili, Associate Professor phone: (0431) 264440, (895) 114463 E-mail: g.lekveishvili@gmail.com |
| **Length of the program (semester, ECTS)** | **240 credits,** one credit – 25 astronomic hours, 6000 hours in all * **General university courses - 15 credits**
* **General faculty compulsory courses – 65 credits**
* **General faculty elective courses –18 credits**
* **Program compulsory courses - 91 credits**
* **Program’s elective module courses - 51 credits.**
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| **Language of the Program**  | **Georgian** |
| **Program development and renewal date of issue** | **29.08.2011** |
| **Program prerequisites** |
| Certificate of general education or the equivalent document. For citizens of Georgia – certificate of confirmation of passing the unified national exams (three compulsory exams – Georgian language, Foreign language and General skills, and one elective from the following subjects: Mathematics, Physics, Geography, History), which grants them student status, or the equivalent document for foreign citizens, in the case of the appropriate inter-state agreement.  |
| **Aim of the Program** |
| The program is aimed at training of highly-qualified specialist in the field of the road transport, who is expected to be able: to ensure stable functioning and development of road transport enterprises and service centers; to enhance the operating reliability of vehicles; to improve transport efficiency; to promote the common interests of actors employed in transportation companies and in the field of technical operation of vehicles.  |
| **Learning outcomes (General and branch competences)**Holder of Bachelor’s degree in the field of Transportation Engineering is expected to be able: to organize his/her own and team work; to collect, process, store and transfer information; to achieve his/her objectives in the process of the performance of professional duties; to organize highly efficient teamwork using accumulated knowledge; to find and use the optimal administrative solutions under conditions of modern demands; to provide management of the production systems and teams on the basis of theoretical and practical training, taking into account technical, economic and social factors. Bachelor of Engineering Science in Transportationhas **competences as follows:** |
| **Knowledge and understanding** | Knowledge of the vehicles operating conditions in the transport process; description of the purposes and capacities of vehicles; selection of vehicles with the best operating properties following from the types of the goods transported and the specificity of passenger transport, as well as determination of the conditions of their effective use in the transport process; knowledge of the progressive methods of organizing management and technological processes in road transport enterprises; knowledge of the structural changes occuring in the auto parts; determining the periodicity and reliability of vehicles diagnostics; knowledge of the principles of ensuring hgh quality of the performance of vehicle maintenance and repair works; determining the optimal volume of component and operating material supplies to road transport enterprises; knowledge of modern computer technology; knowledge of performing works on the organization and reconstruction of technological zones and storage facilities in road transport enterprises; knowledge of technological processes of vehicle maintenance and repair; carrying out economic, organizational-managerial, production-technological activities and performing design and reconstruction works in road transport companies; identifying the prospects for the development of road transport enterprises.  |
| **Applying knowledge** | Ability to set goal, formulate objactives and perform professional duties; ability to organize highly efficient teamwork using accumulated knowledge; ability find and use the optimal administrative solutions under conditions of contradictory demands; Knowledge of foundations of industrial relations and management of the production systems and teams on the basis of theoretical and practical training, taking into account technical, economic and social factors;Application of the progressive methods of organizing management and technological processes in road transport enterprises; * + - * Performing high quality vehicle maintenance and repair works;
			* Preparation of data, use of databank; use of methods for determining loads of the main aggregates of vehicles; designing structural and functional models of diagnostics of vehicles; performing works on organizing-reconstructing technological zones and storage facilities in road transport enterprises;
			* Road transport planning and supply activity.
 |
| **Making judgement** | * + - * Knowledge of the principles of systems analysis; ability to use models for describing and predicting different phenomena, for their qualitative and quantitative analysis;
			* Knowledge of the requirements in the field of humanities and socio-economic sciences; ability to provide scientific analysis of social problems and processes and to use methods of these sciences in professional and social activities.
 |
| **Communication skills** | Ability to upgrade his/her skills and to communicate in foreign languages;Having a culture of thinking and knowledge of its general laws; ability to formulate properly (logically) the obtained results orally and in writing.  |
| **Learning skills** | Ability to upgrade his/her skills and to communicate in foreign languages;Having a culture of thinking and knowledge of its general laws; ability to formulate properly (logically) the obtained results orally and in writing.  |
| **Values** | Scientific understanding of healthy lifestyles and awareness of methods and skills of physical self-improvement;Knowledge of ethical and legal standards regulating relations between people, as well as between the human being and society and environment, and ability to take them into account when developing the economically and socially important projects. |
| **Teaching methods** |
| Discussion/debates, collaborative work, teamwork, problem-based learning, heuristic approach, case studies, brainstorming, role and case plays, demonstrative method, induction and deduction methods, method of analysis and synthesis, verbal or oral method, writing method, laboratory method, practical methods, explanatory method, action-oriented teaching.  |
| **Structure of the Program** |
| **see attached document 2** |
| **Assessment System** |
| The assessment system of the academic performance of students in higher education programs is in compliance with the Order of the Minister of Education and Science of Georgia of 5 January 2007 No 3 “On approving the calculation rules of credits for higher education programs” (as at 1 September 2016). The students grading scheme includes, a) five types of positive assessment:(A) Excellent – 91-100 points. (B) Very good – 81-90 points.  (C) Good – 71-80 points.  (D) Satisfactory – 61-70 points. (E) Acceptable – 51-60 points. b) two types of negative assessment:(FX) Student could not pass examination – 41-50 point that means that she/he is required to work more for passing the exam, and that s/he is entitled to retake exam only once after individual work;(F) failed to pass –40 points and lower that means that the work done by student is not sufficient and she/he has to redo the course. Within the training component of educational program, in case of FX assessment, a makeup exam is appointed no later than 5 days since the announcement of the examination results.Maximum course assessment score is 100 points.The assessment of the academic performance of student in each course consists of the interim and final assessments, of which the conclusive one is a Final Examination. The maximum score for final examination is 40 points. Student has the right to take the final exam, if his/her minimum assessment score at mid-term examination is 18 points. The number of points received in a makeup examination is a final assessment score and is not added to the final assessment received by student, and it will be reflected in final assessment of the training component. With account for the assessment received in the educational component, in case of final assessment score 0-50 points, student is assessed at F-0 point. The assessment schemes for each particular course are given in syllabuses presented in annexes to this Program.  |
| **Employment opportunities** |
| Car manufacturing plants, road transport companies, vehicle maintenance stations, bus stations, service centers, freight and passenger carriage companies, transport organization of any organizational-legal form (private, state-owned, municipal transport companies, production co-operatives, business partnerships and societies), as well as organizations and institutions having recognized the need for professional knowledge in the field of vehicles operation (emergency ambulance, fire-fighting service, gas and electric power emergency, organization and management of traffic of transport of urban utilities system services), professional retraining centers.  |
| **Supportive resources**  |
|   **see attached document 3** |
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**Attachment 1**

**Akaki Tsereteli State University**

**Faculty of Technical Engineering**

**Bachelor Program**

**Vehicles and Vehicle Fleet**

**Study Schedule 2017-2021**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| No | Course title  | Hours per week | Number of credits | Number of hours | Lect./practic./group/lab | Semesters | Precondition |
| Total | Contact hours | Independent | I | II | III | IV | V | VI | VII | VIII |
| Class hours  | Mid-term and final exams |
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** |
|  | **University compulsory courses (15 credits)** |
| **1** | Foreign Language 1 (Russian) |  | 5 | 125 | 60 | 2 | 63 | 0.60.0 |  | 5 |  |  |  |  |  |  |  |
|  | Foreign Language 1 (English) |  | 5 | 125 | 60 | 2 | 63 | 0.60.0 |  | 5 |  |  |  |  |  |  |  |
|  | Foreign Language 1 (French) |  | 5 | 125 | 60 | 2 | 63 | 0.60.0 |  | 5 |  |  |  |  |  |  |  |
|  | Foreign Language 1 (German) |  | 5 | 125 | 60 | 2 | 63 | 0.60.0 |  | 5 |  |  |  |  |  |  |  |
| **2** | Foreign Language 2 (Russian) |  | 5 | 125 | 60 | 2 | 63 | 0.60.0 |  |  | 5 |  |  |  |  |  |  |
|  | Foreign Language 2 (English) |  | 5 | 125 | 60 | 2 | 63 | 0.60.0 |  |  | 5 |  |  |  |  |  | **1** |
|  | Foreign Language 2 (French) |  | 5 | 125 | 60 | 2 | 63 | 0.60.0 |  |  | 5 |  |  |  |  |  |  |
|  | Foreign Language 2 (German) |  | 5 | 125 | 60 | 2 | 63 | 0.60.0 |  |  | 5 |  |  |  |  |  |  |
| **3** | Foreign Language 3 (Russian) |  | 5 | 125 | 60 | 2 | 63 | 0.60.0 |  |  |  | 5 |  |  |  |  |  |
|  | Foreign Language 3 (English) |  | 5 | 125 | 60 | 2 | 63 | 0.60.0 |  |  |  | 5 |  |  |  |  | **2** |
|  | Foreign Language 3 (French) |  | 5 | 125 | 60 | 2 | 63 | 0.60.0 |  |  |  | 5 |  |  |  |  |  |
|  | Foreign Language 3 (German) |  | 5 | 125 | 60 | 2 | 63 | 0.60.0 |  |  |  | 5 |  |  |  |  |  |
|  | **Faculty compulsory courses (65 credits)** |
| **4** | Linear Algebra and Analytic Geometry |  | 5 | 125 | 45 | 2 | 78 | 15.30.0 | 5 |  |  |  |  |  |  |  | - |
| **5** | Mathematical Analysis - 1 |  | 5 | 125 | 45 | 2 | 78 | 15.30.0 | 5 |  |  |  |  |  |  |  | - |
| **6** | Mathematical Analysis - 2 |  | 5 | 125 | 45 | 2 | 78 | 15.30.0 |  | 5 |  |  |  |  |  |  | 5 |
| **7** | Probability Theory and Statistics |  | 5 | 125 | 45 | 2 | 78 | 15.30.0 |  | 5 |  |  |  |  |  |  |  |
| **8** | Fundamentals of Mechanics |  | 5 | 125 | 45 | 2 | 78 | 15.30.0 | 5 |  |  |  |  |  |  |  | - |
| **9** |  Physics - 1 |  | 4 | 100 | 45 | 2 | 53 | 15.15.15 |  | 4 |  |  |  |  |  |  | - |
| **10** | Physics -2 |  | 4 | 100 | 45 | 2 | 53 | 15.15.15 |  |  | 4 |  |  |  |  |  | 9 |
| **11** | Chemistry |  | 5 | 125 | 45 | 2 | 78 | 151515 | 5 |  |  |  |  |  |  |  |  |
| **12** | Engineering Graphics |  | 5 | 125 | 45 | 2 | 78 | 15.0.30 | 5 |  |  |  |  |  |  |  |  |
|  | **Computing**  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **13** | Computer Skills - 1 |  | 5 | 125 | 45 | 2 | 78 | 15.0.30 | 5 |  |  |  |  |  |  |  |  |
| **14** | Computer Skills - 2 |  | 3 | 75 | 30 | 2 | 43 | 0.0.30 |  | 3 |  |  |  |  |  |  | 13 |
| **15** | Engineering Computer Graphics |  | 5 | 125 | 45 | 2 | 78 | 0.0.45 |  | 5 |  |  |  |  |  |  |  13 |
| **16** | MathCAD |  | 3 | 75 |  30 | 2 | 43 | 15.0.30 |  | 3 |  |  |  |  |  |  | 13 |
|  | **Economic and managerial disciplines**  |  |  |  |  | 2 |  |  |  |  |  |  |  |  |  |  |  |
| **17** | Micro & Macro Economics |  | 3 | 75 | 30 | 2 | 43 | 15.15.0 |  |  |  | 3 |  |  |  |  | - |
| **18** | Fundamentals of Transport Business Legislation |  | 3 | 75 | 30 | 2 | 43 | 15.15.0 |  |  |  |  |  |  | 3 |  | - |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **19** | **Elective courses - 18 credits** |
| **1\*** | Fundamentals of Marketing |   | 3 | 75 | 30 | 2 | 43 | 15.15.0 |  |  |  |  |  |  | 6 |  | 17 |
| **2\*** | Project (Transport) Management  |   | 3 | 75 | 30 | 2 | 43 | 15.15.0 |  |  |  |  |  | 17 |
| **3\*** | History of Georgia  |   | 3 | 75 | 30 | 2 | 43 | 15.15.0 |  |  |  |  | 6 | 6 |  | - |
| **4\*** | Philosophy |   | 3 | 75 | 30 | 2 | 43 | 15.15.0 |  |  |  |  |  | - |
| **5\*** | Entrepreneurship and Problem Solving |   | 3 | 75 | 30 | 2 | 43 | 15.15.0 |  |  |  |  |  | 17,19 |
| **6\*** | Fundamentals of Logistics |   | 3 | 75 | 30 | 2 | 43 | 15.15.0 |  |  |   |  |  | - |
| **7\*** | Emergency Situations and Civil Defense  |   | 3 | 75 | 30 | 2 | 43 | 15.15.0 |  |  |  |  |  | - |
| **8\*** | Political Science |   | 3 | 75 | 30 | 2 | 43 | 15.15.0 |  |  |  |  |  | - |
| **9\*** | Ethics |   | 3 | 75 | 30 | 2 | 43 | 15.15.0 |  |  |  |  |  | - |
| **10\*** | Mathematical methods and models in management  |  | 3 | 75 | 30 | 2 | 43 | 15.15.0 |  |  |  |  |  |  5,6 |
| **11** | Foreign Language (branch-wise) |   | 6 | 150 | 60 | 2 | 88 | 0.60,0 |  |  |  |  |  |  1,2,3 |
|  | **Specialty compulsory courses (91 credits)** |
| **20** | Dynamics |   | 5 | 125 | 45 | 2 | 78 | 15.30.0. |  |  | 5 |  |  |  |  |  |  |
| **21** | Theory of Strength of Materials |  | 5 | 125 | 45 | 2 | 78 | 15.15.15 |  |  |  | 5 |  |  |  |  |  |
| **22** | Machine elements |   | 6 | 150 | 75 | 2 | 73 | 30.30.15 |  |  |  |  | 6 |  |  |  | 21 |
| **23** | Fluid and air mechanics. Hydro- and pneumo-engines  |   | 5 | 125 | 45 | 2 | 78 | 15.15.15 |  |  | 5 |  |  |  |  |  | 22 |
| **24** | Materials and their processing  |   | 5 | 125 | 45 | 2 | 78 | 30.15.0 |  |  | 5 |  |  |  |  |  |  |
| **25** | Replaceability and technical measurements  |   | 4 | 100 | 45 | 2 | 53 | 15.15.15 |  |  |  | 4 |  |  |  |  | 21 |
| **26** | Thermodynamics and heat transmission  |   | 5 | 125 | 45 | 2 | 78 | 15.15.15 |  |  |  | 5 |  |  |  |  |  |
| **27** | Electrical technology and basics of electronics  |   | 5 | 125 | 45 | 2 | 78 | 15.15.15. |   |   |  | 5 |  |  |   |   |  |
| **28** | Vehicles electronics and electrical systems  |   | 3 | 75 | 30 | 2 | 43 | 15.0.15. |  |  |  |  | 3 |  |  |  | 27 |
| **29** | Transport and logistics systems |  | 3 | 75 | 30 | 2 | 43 | 15.15.0. |  |  | 3 |  |  |  |  |  | - |
| **30** | Automated systems of vehicle control  |  | 5 | 125 | 45 | 2 | 78 | 15.15.15 |  |  |  |  |  | 5 |  |  | 27 |
| **31** | Vehicle designs  |  | 5 | 125 | 45 | 2 | 78 | 15.30.0 |  |  |  |  | 5 |  |  |  | 22 |
| **32** | Motor vehicle theory  |  | 5 | 125 | 45 | 2 | 78 | 15.15.15 |  |  |  |  |  | 5 |  |  |  |
| **33** | Vehicle engines and hybrid drivers  |  | 3 | 75 | 30 | 2 | 43 | 15.15.0 |  |  |  |  | 3 |  |  |  | 31 |
| **34** | Organization and safety of road traffic  |  | 4 | 100 | 45 | 2 | 53 | 15.15.15 |  |  |  |  |  | 4 |  |  |  |
| **35** | Engineering maintenance materials  |  | 3 | 75  | 30 | 2 | 43 | 15.0.15 |  |  | 3 |  |  |  |  |  | 11 |
| **36** | Transport-operating properties of highways  |  | 3 | 75 | 30 | 3 | 43 | 15.15.0. |  |  |  |  | 3 |  |  |  |  |
| **37** | Loading-overloading machinery and devices  |  | 4 | 100 | 45 | 2 | 53 | 15.15.15 |  |  |  |  |  | 4 |  |  |  |
| **38** | Expertise of road transport accidents  |   | 3 | 75 | 30 | 2 | 43 | 15.15.0. |  |  |  |  |  | 3 |  |  | 34 |
| **39** | Ecology and life safety in transport  |   | 4 | 100 | 45 | 2 | 53 | 30.15.0 |  |  |  |  | 4 |  |  |  | 31,35 |
|  | Practices |   |  |  |  |  |  |  |   |   |  |  |  |  |   |   |  |
| **40** | Practical training  |   | 3 | 100 |  |  |  |  |  |  |  | 3 |  |  |   |   | 23-30 |
| **41** | Work experience internship |  | 3 | 50 |  |  |  |  |  |  |  |  |  | 3 |  |  | 23-40 |
| **Total** |  |  |  |  |  |  |  |  |  |
|  | Elective module – **Road transport operation (51 credits)** |
| **42** | Vehicle technical maintenance  |  | 6 | 150 | 75 | 2 | 73 | 30.15.30 |  |  |  |  |  |  | 6 |  | 32,35 |
| **43** | Vehicle diagnostics and foundations of reliability -1  |  | 3 | 75 | 30 | 2 | 43 | 15.15.0 |  |  |  |  |  |  | 3 |  | 31 |
| **44** | Vehicle diagnostics and foundations of reliability -2 |  | 8 | 200 | 75 | 2 | 123 | 30.0.45. |  |  |  |  |  |  |  | 8 | 43 |
| **45** | Vehicle repair  |  | 8 | 200 | 75 | 2 | 123 | 30.30.15. |  |  |  |  |  |  |  | 8 | 31,32, 42 |
| **46** | Transportation by road |  | 5 | 125 | 45 | 2 | 78 | 15.30.0. |  |  |  |  |  |  | 5 |  | 32,36 |
| **47** | Road transport companies and infrastructures  |  | 4 | 100 | 45 | 2 | 53 | 30.15.0. |  |  |  |  |  |  | 4 |  | 42 |
| **48** | Testing of vehicles  |  | 7 | 175 | 75 | 2 | 98 | 45.30.0. |  |  |  |  |  |  |  | 7 | 32,43 |
| **49** | Computer technology in road transport -1  |  | 3 | 75 | 30 | 2 | 43 | 15.15.0. |  |  |  |  |  |  | 3 |  | 14,32 |
| **50** | Computer technology in road transport -2 |  | 7 | 175 | 75 | 2 | 98 | 30.45.0. |  |  |  |  |  |  |  | 7 | 49 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Total** |  |  |  |  |  |  |  |  |  |
|  | **Operation and environmental safety of vehicle engines (51 credits)** |
| **51** | Theory of vehicle engines operation processes  |  | 5 | 125 | 45 | 2 | 78 | 30.15.0 |  |  |  |  |  |  | 5 |  | 32,33 |
| **52** | Dynamics of vehicle engines operation processes |  | 5 | 125 | 45 | 2 | 78 | 30.15.0 |  |  |  |  |  |  |  | 5 | 32,33 |
| **53** | Fuels, lubricants and freezing liquids (chemmotology)  |  | 3 | 75 | 30 | 2 | 43 | 15.15.0 |  |  |  |  |  |  | 3 |  | 32,33 |
| **54** | Air-exchange systems and aggregates of vehicles  |  | 5 | 125 | 45 | 2 | 78 | 15.15.15 |  |  |  |  |  |  | 5 |  | 32,33 |
| **55** | Vehicles fuel supply systems and aggregates  |  | 5 | 125 | 45 | 2 | 78 | 15.15.15 |  |  |  |  |  |  |  | 5 | 32,33 |
| **56** | Automated regulation and control of vehicle engines -1 |  | 4 | 100 | 45 | 2 | 53 | 15.15.15 |  |  |  |  |  |  | 4 |  | 4,32,35 |
| **57** | Automated regulation and control of vehicle engines -2 |  | 5 | 125 | 45 | 2 | 78 | 15.15.15 |  |  |  |  |  |  |  | 5 | 30,33 |
| **58** | Vehicle engines operation (maintenance, diagnostics and repair) -1 |  | 4 | 100 | 45 | 2 | 53 | 15.15.15 |  |  |  |  |  |  | 4 |  | 57 |
| **59** | Vehicle engines operation (maintenance, diagnostics and repair) -2 |  | 7 | 175 | 75 | 2 | 98 | 30.30.15 |  |  |  |  |  |  |  | 7 | 32,33,35, |
| **60** | Environmental safety of vehicle engines  |  | 8 | 200 | 75 | 2 | 123 | 45.30.0 |  |  |  |  |  |  |  | 8 | 39, 256,59 |
| **Total** |  |  |  |  |  |  |  |  |  |