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**Curriculum**

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| --- | --- | --- | --- |
| **Program** | | Bachelor educational program – **CIVIL ENGINEERING** | |
| **Degree awarded** | | **Bachelor of Civil Engineering** | |
| **Faculty** | | **Faculty of Technical Engineering** | |
| **Program coordinator/coordinators** | | **Professor Parmen Kipiani** | |
| **Length of the program (semester, ECTS)** | | **240 credits,** one credit – 25 astronomic hours, 6000 hours in all General university courses - 15 credits   * General faculty courses - 68 credits * General faculty elective courses –18 credits * Program compulsory courses - 94 credits   Elective module courses - 45 credits | |
| **Language of the Program** | | | **Georgian** |
| **Program development and renewal date of issue** | | |  |
| **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, Chemistry, Biology, 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 forming a complexcknowledge and skills of future bachelor of Civil Engineering on the basis of acquiring basic knowledge in general engineering and soecial disciplines, in order to exercise duties of intermediate level specialist in the process of design and construction of various-purpose buildings, develop their general and branch competences required for design and construction activities; by providing students with theoretical knowledge and practical skills, giving them the opportunity to be aware of modern technologies, economic tendencies and values, and using them in professional activities. | | | |
| **Learning outcomes (General and branch competences)** | | | |
| **Knowledge and understanding** | * Knowledge of the field-related issues of design and construction of buildings and structures, maintenance and repair of these structures, and principles of their management. * Awareness of the advanced new technologies and participation in the process of their introduction. * Evaluation of reliability of the constructions and buildings in accordance with relevant recommendations; * Considering the constructions and buildings in the context of their peculiarities; * Performing technical functions during the process of comparing the presented projects and selecting the optimal option. * Knowledge of technical parameters of the required raw materials, reagents, materials and finished products. * Knowledge and understanding of basic principles and construction market perspectives. | | |
| **Applying knowledge** | * Performing the functions of the technical middle-management level in various-purpose construction projects: using them in accordance with the project and other types of documentation (projects, cost sheet, material certificates, delivery and acceptance acts, etc.), organizing the construction works, adherence to specifications, facilities management, workplace management and safety arrangements. * Troubleshooting, diagnostics and developing recommendations in compliance with engineering specifications. * Calculating parameters of reconstruction of buildings and structures. * Selecting materials and products and offering them for particular works. * Participating in the construction-related research activities by using appropriate instruments. * Combining the functions of an architect, designer and manager in the process of building design. * Planning the organizational schemes of works, preparing the estimate and financial documentation, selecting the optimal options for construction work by using the existing methods. * Intensifying the application of the latest information technology. * As appropriate, taking the lead in the activities and summarizing the obtained results. | | |
| **Making judgement** | * Analyzing new construction technologies and developing recommendations for introducing them under present conditions. * Providing a comparative analysis of different methods of undertaking works and making conclusion on the best option. * Searching for the alternative versions of the components of the construction process, and making proper conclusions on the basis of their analysis. * As appropriate, having the ability to critically analyze the existing information. | | |
| **Communication skills** | * Expressing freely their views on general and professional topics with relevant explanations in the native and foreign languages. * Applying modern information and communication technologies in design, technical-economic and organizational activities of the construction sector. * The ability to justify their own decisions. * Documenting the operation results and organizing the presentation in professional and non-professional environments. * Adequate responding to alternative views, defending their own views by adducing appropriate arguments. | | |
| **Learning skills** | * Comparing their own knowledge in the construction field acquired from information received, with the level of knowledge existing on the labour market, while taking account of the practical and theoretical requirements. * Based on the analysis of the educational programs’ training courses, selecting those disciplines, which springboard for achieving the aim in the context of the employment, determining the opportunity for continuing education and selecting the particular direction of the field. | | |
| **Values** | * Respect for opposing views and defending and justifying their own views. * Self-criticism. Criticism in accordance with code of professional and human ethics. * Observing the principles of justice in the course of activities. * Considering the issues related to ecology and environment protection at all stage of construction. | | |
| **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** | | | |
| The total volume of a Program is 240 credits.  General university compulsory courses - 75 credits (I, II, III and IV semetsers)  Elective courses - 15 credits (V, VI and VII semesters)  General specialty courses –105 credits (III, IV, V, VI, VII and VIII semesters)  Elective specialty courses - 45 credits (VII and VIII semesters).  **see attached document 1** | | | |
| **Assessment System** | | | |
| The final assessment of the academic performance of student in each course consists of interim and final assessment, 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.  If due to justified reasons, student has no any assessment component, student is given the right by Dean of Faculty to retake examination.  The students grading scheme includes,  **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.  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.  **Student’s performance assessment criteria**   |  |  | | --- | --- | | *Assessment component* | *Share of components* | | Interim assessment | 30 | | Final examination | 40 | | Activity | 30 | | Total | 100 | | | | |
| **Employment opportunities** | | | |
| Bachelor of Civil Engineering can work on the construction of civilian buildings, motor roads, hydraulic structures, transfer and infield pipelines, terminals and other facilities, for the construction companies and project organizations. | | | |
| **Supportive resources** | | | |
| Material resources required for implementation of educational program are as follows:   1. Faculty’s scientific and technical library; 2. Additional resource materials created by teaching staff engaged in the field of welding production. 3. The training engineering laboratories (including welding field); 4. Faculty’s computer centers; 5. Faculty’s laboratories of the Department of Civil Engineering equipped with the welding devices: 6. Electric-arc welding laboratory; 7. Flux coating welding apparatus; 8. Two semi-automatic machines for welding in protective gases; 9. Automatic machine for welding in protective gases; 10. Contact welding laboratory with two spot welding and one roll welding machines; 11. Test-bench for determining stresses and strains; 12. Mock-ups for studying the process of mechanization and power supply sources; 13. Pipe automatic welding equipment; 14. Test-bench for materials required for fabrication of welding materials; 15. Demonstrative “posters”; 16. Stresses and strains test specimens; 17. Ultrasonic and cold-welding devices. 18. Faculty’s laboratory of hydraulic structures of the Department of Civil Engineering equipped with the following devices: 19. Determination of hydrpstatic pressure – device GD-1; 20. Determination of a free liquid surface shape in a rotatory cylindrical vessel - device GD-2; 21. Illustration of Bernoulli’s equation - device GD-3; 22. Determination of a Reynolds number - device GD-4; 23. Determination of frictional resistance factor in a pressure pipeline - device GD-5; 24. Exhausting the fluid from the openings and hoods at a constant head – device PS-2. 25. Faculty’s laboratories of civil and industrial construction of the Department of Civil Engineering equipped with the following devices: 26. Test-bench for determining natural stone density and general density; 27. Test-bench for determining porosity and water absorbability of materials. Thermostat and exicator; 28. Test-bench for determining ultimate stress limit. Hydraulic jack Q 25 t; 29. Test-bench for determining technical parameters of ceramic and raw materials; 30. Test-bench for determining technical parameters of a gypsum building plaster. Sieve set, spherical plate, etc.; 31. Building lime test bench; 32. Test-bench for determining physical-mechanical properties of cement with complete laboratory equipment: Vicat apparatus, gauges, bath; 33. Sand and road metal test bench with equipment; 34. Electronic device for determination of contamination; 35. Test-bench for determining technical parameters of a concrete mix and concrete; 36. Hydraulic jack Q 75 t; 37. Digital device for determining concrete strength by continuous method; 38. Building mortar test bench; 39. Test-bench for determining physical-mechanical properties of wood; 40. Test-bench for determining the properties of viscose bitumen and tar; 41. Test-bench for determining the properties of paint-and-lacquer materials; 42. Roll roof and waterproof materials test bench. | | | |
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**Attachment 1**

**Akaki Tsereteli State University**

**Faculty of Technical Engineering**

**Bachelor Program**

**CIVIL ENGINEERING**

**Study Schedule 2017-2021**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| № | 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 |
| 1 | **University compulsory courses (15 credits)** | | | | | | | | | | | | | | | | |
| 1 | Foreign Language 1 (Russian) |  | 5 | 125 | 60 | 2 | 63 | 0.60.0.0 |  | 5 |  |  |  |  |  |  |  |
|  | Foreign Language 1 (English) |  | 5 | 125 | 60 | 2 | 63 | 0.60.0.0 |  | 5 |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Foreign Language 1 (French) |  | 5 | 125 | 60 | 2 | 63 | 0.60.0.0 |  | 5 |  |  |  |  |  |  |  |
|  | Foreign Language 1 (German) |  | 5 | 125 | 60 | 2 | 63 | 0.60.0.0 |  | 5 |  |  |  |  |  |  |  |
| 2 | Foreign Language 2 (Russian) |  | 5 | 125 | 60 | 2 | 63 | 0.60.0.0 |  |  | 5 |  |  |  |  |  |  |
|  | Foreign Language 2 (English) |  | 5 | 125 | 60 | 2 | 63 | 0.60.0.0 |  |  | 5 |  |  |  |  |  |  |
|  | Foreign Language 2 (French) |  | 5 | 125 | 60 | 2 | 63 | 0.60.0.0 |  |  | 5 |  |  |  |  |  |  |
|  | Foreign Language 2 (German) |  | 5 | 125 | 60 | 2 | 63 | 0.60.0.0 |  |  | 5 |  |  |  |  |  |  |
| 3 | Foreign Language 3 (Russian) |  | 5 | 125 | 60 | 2 | 63 | 0.60.0.0 |  |  |  | 5 |  |  |  |  |  |
|  | Foreign Language 3 (English) |  | 5 | 125 | 60 | 2 | 63 | 0.60.0.0 |  |  |  | 5 |  |  |  |  |  |
|  | Foreign Language 3 (French) |  | 5 | 125 | 60 | 2 | 63 | 0.60.0.0 |  |  |  | 5 |  |  |  |  |  |
|  | Foreign Language 3 (German) |  | 5 | 125 | 60 | 2 | 63 | 0.60.0.0 |  |  |  | 5 |  |  |  |  |  |
| **Total** | |  | **15** | **375** | **180** | **6** | **189** | **-** |  | | | | | | | |  |
| 2 | **Faculty compulsory courses (68 credits)** | | | | | | | | | | | | | | | | |
| 4 | Linear Algebra and Analytic Geometry |  | 5 | 125 | 45 | 2 | 78 | 15.30.0 | 5 |  |  |  |  |  |  |  |  |
| 5 | Mathematical Analysis - 1 |  | 5 | 125 | 60 | 2 | 78 | 30.30.0 | 5 |  |  |  |  |  |  |  |  |
| 6 | Mathematical Analysis - 2 |  | 5 | 125 | 45 | 2 | 78 | 15.30.0 |  | 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 |  |  |  |  |  |  |
| 11 | Chemistry |  | 5 | 125 | 45 | 2 | 78 | 15.15.15 | 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 |  |  |  |  |  |  |  |
| 15 | Engineering Computer Graphics |  | 5 | 125 | 45 | 2 | 78 | 0.0.45 |  | 5 |  |  |  |  |  |  |  |
| 16 | MathCAD |  | 3 | 75 | 45 | 2 | 28 | 15.0.30 |  | 3 |  |  |  |  |  |  |  |
|  | **Economic and managerial disciplines** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 17 | Micro & Macro Economics |  | 3 | 75 | 30 | 2 | 43 | 15.15.0 |  |  | 3 |  |  |  |  |  |  |
| 18 | Mathematical Methods and Models in Management |  | 3 | 75 | 30 | 2 | 43 | 15.15.0 |  |  |  |  | 3 |  |  |  |  |
| 19 | Fundamentals of Business Legislation |  | 3 | 75 | 30 | 2 | 43 | 15.15.0 |  |  |  |  | 3 |  |  |  |  |
| **Total** | |  | 68 |  |  |  |  |  |  | | | | | | | |  |
|  | **Faculty elective courses 18 credits** | | | | | | | | | | | | | | | | |
| 1\* | Marketing Fundamentals |  | 3 | 75 | 30 | 2 | 43 | 15.15.0 |  |  |  |  | 6 | 6 | 6 |  |  |
| 2\* | Project Management |  | 3 | 75 | 30 | 2 | 43 | 15.15.0 |  |  |  |  |  |  |
| 3\* | Fundamentals of Logistics |  | 3 | 75 | 30 | 2 | 43 | 15.15.0 |  |  |  |  |  |  |
| 4\* | Entrepreneurship and Problem Solving |  | 3 | 75 | 30 | 2 | 43 | 15.15.0 |  |  |  |  |  |  |
| 5\*\* | Principles of Economics |  | 3 | 75 | 30 | 2 | 43 | 15.15.0 |  |  |  |  |  |  |
| 6\*\* | History of Georgia |  | 3 | 75 | 30 | 2 | 43 | 15.15.0 |  |  |  |  |  |  |
| 7\*\* | Philosophy |  | 3 | 75 | 30 | 2 | 43 | 15.15.0 |  |  |  |  |  |  |
| 8\*\* | Emergency Situations and Civil Defense |  | 3 | 75 | 30 | 2 | 43 | 15.15.0 |  |  |  |  |  |  |
| 9\*\* | Political Science |  | 3 | 75 | 30 | 2 | 43 | 15.15.0 |  |  |  |  |  |  |
| 10\*\* | Ethics |  | 3 | 75 | 30 | 2 | 43 | 15.15.0 |  |  |  |  |  |  |
| 11\*\* | Standardization and Certification in Engineering |  | 6 | 150 | 45 | 2 | 103 | 30.15.0 |  |  |  |  |  |  |
| 12\*\* | Ecology and Life Safety |  | 6 | 150 | 45 | 2 | 103 | 15.30.0 |  |  |  |  |  |  |
| 13\*\* | Branch Foreign Language (English) |  | 6 | 150 | 45 | 2 | 103 | 0.45.0 |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Total** | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | **Program compulsory courses (94 credits)** | | | | | | | | | | | | | | | | |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 20 | Statics and 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 | Fluid Mechanics - 1 |  | 7 | 175 | 75 | 2 | 98 | 30.15.30 |  |  |  | 7 |  |  |  |  |  |
| 23 | Fluid Mechanics - 2 |  | 4 | 100 | 45 | 2 | 53 | 15.15.15 |  |  |  |  | 4 |  |  |  |  |
| 24 | Electrical Engineering and Electronics |  | 5 | 125 | 45 | 2 | 78 | 15.15.15 |  |  |  | 5 |  |  |  |  |  |
| 25 | Heat Transfer |  | 5 | 125 | 45 | 2 | 78 | 15.15.15 |  |  |  | 5 |  |  |  |  |  |
| 26 | Architecture |  | 3 | 75 | 30 | 2 | 43 | 15.0.15 |  |  |  |  |  | 3 |  |  |  |
| 27 | Building Materials and Products |  | 4 | 100 | 45 | 2 | 53 | 30.0.15 |  |  |  |  |  | 4 |  |  |  |
| 28 | Engineering Surveying |  | 8 | 200 | 75 | 2 | 123 | 15.30.30 |  |  | 8 |  |  |  |  |  |  |
| 29 | Engineering Geology and Basements |  | 5 | 125 | 45 | 2 | 78 | 15.30.0 |  |  |  |  | 5 |  |  |  |  |
| 30 | Structural Mechanics -1 |  | 5 | 125 | 45 | 2 | 78 | 15.30.0 |  |  |  |  | 5 |  |  |  |  |
| 31 | Structural Mechanics -2 |  | 3 | 75 | 30 | 2 | 43 | 15.15.0 |  |  |  |  |  | 3 |  |  |  |
| 32 | Engineering Structures -1 |  | 7 | 175 | 75 | 2 | 98 | 30.30.15 |  |  |  |  |  | 7 |  |  |  |
| 33 | Engineering Structures -2 |  | 4 | 100 | 45 | 2 | 53 | 15.30.0 |  |  |  |  |  |  | 4 |  |  |
| 34 | Engineering Structures -3 |  | 5 | 125 | 45 | 2 | 78 | 15.30.0 |  |  |  |  |  |  |  | 5 |  |
| 35 | Construction Plant and Equipment -1 |  | 4 | 100 | 45 | 2 | 53 | 15.15.15 |  |  |  |  | 4 |  |  |  |  |
| 36 | Construction Plant and Equipment -2 |  | 4 | 100 | 45 | 2 | 53 | 15.15.15 |  |  |  |  |  | 4 |  |  |  |
| 37 | Constructional Drawing |  | 5 | 125 | 45 | 2 | 78 | 15.0.30 |  |  | **5** |  |  |  |  |  |  |
|  | **Practice** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 38 | Practical Training |  | 3 | 100 |  |  |  |  |  |  |  | 3 |  |  |  |  |  |
| 39 | Work Experience Internship |  | 3 | 50 |  |  |  |  |  |  |  |  |  | 3 |  |  |  |
|  | |  |  |  |  |  |  |  |  | | | | | | | |  |
| **Program elective courses (45 credits – 5 modules)** | | | | | | | | | | | | | | | | | |
| **Module -1 “Industrial and Civil Engineering”** | | | | | | | | | | | | | | | | | |
| 40 | Technology of Concretes and Fillers |  | 5 | 125 | 45 | 2 | 78 | 30.0.15 |  |  |  |  |  |  | 5 |  |  |
| 41 | Engineering Networks and Communication 1 |  | 5 | 125 | 45 | 2 | 78 | 15.30.0 |  |  |  |  |  |  | 5 |  |  |
| 42 | Engineering Networks and Communication 2 |  | 5 | 125 | 45 | 2 | 78 | 15.30.0 |  |  |  |  |  |  |  | 5 |  |
| 43 | Technology, Organization, Planning and Management of Construction Company - 1 |  | 10 | 250 | 90 | 2 | 158 | 30.60.0 |  |  |  |  |  |  | 10 |  |  |
| 44 | Technology, Organization, Planning and Management of Construction Company - 2 |  | 10 | 250 | 90 | 2 | 158 | 30.60.0 |  |  |  |  |  |  |  | 10 |  |
| 45 | Civil and Industrial Building Architecture |  | 5 | 125 | 45 | 2 | 78 | 15.0.30 |  |  |  |  |  |  |  | 5 |  |
| 46 | Occupational safety and Construction in Emergency Situations |  | 5 | 125 | 45 | 2 | 78 | 30.15.0 |  |  |  |  |  |  |  | 5 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Total** | |  |  |  |  |  |  |  |  | | | | | | | |  |
| **Module -2 “Road Construction”** | | | | | | | | | | | | | | | | | |
| 47 | Highway Construction Technology and Organization -1 |  |  | 125 | 45 | 2 | 78 | 15.15.15 |  |  |  |  |  |  | 5 |  |  |
| 48 | Highway Construction Technology and Organization -2 |  |  | 250 | 90 | 2 | 158 | 45.45.0 |  |  |  |  |  |  |  | 10 |  |
| 49 | Highway Design - 1 |  |  | 250 | 90 | 2 | 158 | 30.30.30 |  |  |  |  |  |  | 10 |  |  |
| 50 | Highway Design – 2 |  |  | 125 | 45 | 2 | 78 | 15.15.15 |  |  |  |  |  |  |  | 5 |  |
| 51 | Highway Maintenance - 1 |  |  | 125 | 45 | 2 | 78 | 15.15.15 |  |  |  |  |  |  | 5 |  |  |
| 52 | Highway Maintenance - 2 |  |  | 250 | 90 | 2 | 158 | 45.45.0 |  |  |  |  |  |  |  | 10 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Total** | |  |  |  |  |  |  |  |  | | | | | | | |  |
| **Module – 3 “Oil and Gas Pipeline Construction”** | | | | | | | | | | | | | | | | | |
| 53 | Welded Structures -1 |  |  | 125 | 45 | 2 | 78 | 15.30.0 |  |  |  |  |  |  | 5 |  |  |
| 54 | Welded Structures -2 |  |  | 250 | 90 | 2 | 158 | 30.45.15 |  |  |  |  |  |  |  | 10 |  |
| 55 | Pipeline Welding Technologies and Equipment - 1 |  |  | 250 | 90 | 2 | 158 | 30.30.30 |  |  |  |  |  |  | 10 |  |  |
| 56 | Pipeline Welding Technologies and Equipment - 2 |  |  | 250 | 90 | 2 | 158 | 30.45.15 |  |  |  |  |  |  |  | 10 |  |
| 57 | Construction and Operation of Oil and Gas Pipelines and their Structures -1 |  |  | 125 | 45 | 2 | 78 | 15.15.15 |  |  |  |  |  |  | 5 |  |  |
| 58 | Construction and Operation of Oil and Gas Pipelines and their Structures -2 |  |  | 125 | 45 | 2 | 78 | 15.30.0 |  |  |  |  |  |  |  | 5 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Total** | |  |  |  |  |  |  |  |  | | | | | | | |  |
| **Module -4 “Construction and Operation of Hydraulic Structures”** | | | | | | | | | | | | | | | | | |
| 59 | Hydraulic Calculation and Design |  |  | 250 | 90 | 2 | 158 | 30.60.0 |  |  |  |  |  |  | 10 |  |  |
| 60 | Construction and Operation of Hydraulic Structures |  |  | 250 | 90 | 2 | 158 | 30.60.0 |  |  |  |  |  |  |  | 10 |  |
| 61 | Construction and Operation of Hydraulic Structures |  |  | 250 | 90 | 2 | 158 | 30.60.0 |  |  |  |  |  |  |  | 10 |  |
| 62 | Performance of Hydraulic Engineering Works |  |  | 250 | 90 | 2 | 158 | 30.60.0 |  |  |  |  |  |  | 10 |  |  |
| 63 | Engineering Hydrology |  |  | 125 | 45 | 2 | 78 | 15.30.0 |  |  |  |  |  |  |  | 5 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Total** | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Module -5 “Construction Economics”** | | | | | | | | | | | | | | | | | |
| 64 | Construction Engineering and Contemporary Trends-1 |  |  | 250 | 90 | 2 | 158 | 30.60.0 |  |  |  |  |  |  | 10 |  |  |
| 65 | Construction Engineering and Contemporary Trends -2 |  |  | 125 | 45 | 2 | 78 | 15.30.0 |  |  |  |  |  |  |  | 5 |  |
| 66 | Organization, Planning and Management of Construction Operations -1 |  |  | 125 | 45 | 2 | 78 | 15.30.0 |  |  |  |  |  |  | 5 |  |  |
| 67 | Organization, Planning and Management of Construction Operations -2 |  |  | 125 | 45 | 2 | 78 | 15.30.0 |  |  |  |  |  |  |  | 5 |  |
| 68 | Construction Engineering Management |  |  | 63 | 30 | 2 | 31 | 15.15.0 |  |  |  |  |  |  |  | 2,5 |  |
| 69 | Construction Estimate |  |  | 125 | 45 | 2 | 78 | 15.30.0 |  |  |  |  |  |  |  | 5 |  |
| 70 | Planning and Marketing of Industry Development |  |  | 125 | 45 | 2 | 78 | 15.30.0 |  |  |  |  |  |  | 5 |  |  |
| 71 | Construction Statistics |  |  | 62 | 30 | 2 | 30 | 15.15.0 |  |  |  |  |  |  |  | 2,5 |  |
| 72 | Accounting |  |  | 125 | 45 | 2 | 78 | 15.30.0 |  |  |  |  |  |  |  | 5 |  |
| 73 | Finance and Credit |  |  | 125 | 45 | 2 | 78 | 15.30.0 |  |  |  |  |  |  | 5 |  |  |
| **Total** | |  |  |  |  |  |  |  |  | | | | | | | |  |