REPUBLIC OF UZBEKISTAN

MINISTRY OF HIGHER EDUCATION, SCIENCE AND INNOVATIONS

FERGANA STATE TECHNICAL UNIVERSITY

Construction materials and items

MODULE HANDBOOK

Field of Knowledge :	700000	- Engineering, machining and construction industries
Educational field:	730,000	- Architecture and construction
Education program :	60730300	Civil Engineering

Fergana 2025

Module title	***Construction materials and items***
Code (if available)	*MatResT46*
Semester(s) of module teaching	*4*
Responsible for the module	*Mirzayev Thank you. Kuzibayevich , Construction materials and items Department , PhD, Associate Professor*
Language of instruction	*Uzbek*
Connection to the curriculum	*Elective*
Teaching methods	*lecture , practical training , independent education .*
Study load (including classroom and independent study hours)	*Total hours : 90 hour* *Auditorium hours : 34 hour* *Lecture – 14 hours , practical training – 20 hours ,* *independent education – 56 hour .*
Credit units	***3***
Required and recommended prior knowledge for studying the module	*Construction structures , construction mechanics , groundwork mechanics*
Module objectives/intended learning outcomes	***The purpose of the module:*** *Students are trained to select raw materials, obtain and use building materials, learn about the structure, composition, and physical and mechanical properties of building materials, improve raw materials and types of products in the production of building materials according to modern requirements, confirm their suitability for various purposes, reduce their mass while maintaining their technical properties, and develop skills and ideas for selecting low-energy technologies in production.* *To achieve the above goal, science students will acquire theoretical knowledge, practical skills , and a thorough mastery of the necessary basic formulas; teamwork, independent and critical thinking related to the profession, a culture of communication and drawing conclusions, timely completion, compilation, and presentation of science assignments, searching for information on a given topic, and the skills of preparing and conducting presentations.* *The following requirements are imposed on the knowledge, skills, and qualifications of students in the subject.* ***The student:*** • *In the process of designing buildings and structures, one should have an idea of the raw materials for the production of basic building materials, their production technology, the basic characteristics and properties of building materials, and advanced pedagogical technologies for teaching the subject;* • *Must have the skills to determine the properties of building materials using measuring instruments and equipment, process them to improve their properties and protect them from corrosion, and select and use building materials correctly;* • *They must know and be able to use issues such as taking into account dry and hot climatic conditions when using building materials, using secondary resources in the production of building materials, and obtaining building materials from local raw materials.*

Content	***Module 1. Construction materials and of things general basics*** *Introduction. Construction materials working release history. From ancient times poor and currently discovery done materials. Construction materials raw material base. Secondary from resources use .* ***Module 2. Construction of materials main properties*** *Materials composition, structure and properties integral Micro and macrostructure. Nanostructure. Materials physicist and hydro-physicist Properties of materials. mechanic and deformative properties. Materials thermo physical, deformational, chemical and special properties* ***Module 3. Natural stone materials main properties .*** *Rocks and their Classification of igneous rocks and from them what is available construction Sedimentary rocks and from them removable construction materials. Metamorphic rocks and from them removable construction Natural stone materials from decay storage* ***Module 4. Ceramics materials and items composition and properties*** *Ceramic materials and items for used raw Materials: clay composition and properties; non-staining, non-burning departing additions. Secondary raw from the material use. Ceramic materials and items working release technology and methods. Molded the items drying and burn during passing physicochemical processes. Energy and resources saving* ***Module 5. Hydraulics binders*** *Hydraulic binder materials. Hydraulic lime, roman cement raw material, workmanship release technology, features and usage. Portland cement. Mineral composition of clinker. Cement composition, properties. Production release Cement technology. Hardness. Properties. Brand. Cement stone corrosion, cause, protection* ***Module 6. Concrete and his/her properties. Reinforced concrete constructions.*** *Concrete and its importance in construction. Classification of concretes. Raw materials used for concrete. Properties of concrete and concrete mix. Concept of reinforced concrete. Classification of reinforced concrete products. Technology and methods of production of reinforced concrete products. Energy-efficient reinforced concrete structures.* ***Module 7.*** *Heat insulation and acoustic materials. Heat insulation of materials Classification. Structure. Their main types, composition, properties and energy efficiency. Organic heat insulation materials. Inorganic heat insulation materials.*
Forms of assessment	*oral, presentation, written work, practical assignments, and final exams.*
Requirements for study and assessment	*To successfully complete the module, the student must attend classes and achieve the minimum scores set in the current, midterm, and final assessments.*
Bibliography	*1. Materials for Civil and Construction Engineers FOURTH Edition In si units Michael S. Mamlouk John P. Zaniewski © Pearson Education Limited 2018* *2. G.T. Shiroki M. G. Bortnitskaya Stroitelnye materialy i izdeliya. Textbook. Minsk RIPO 2020 p.433.*

	3. *D.S. Kadyrova Binder substances Textbook Tashkent -2019* 4. *Qasimov IM Modern construction materials and constructions . Textbook . Tashkent. 2020.* 5. *NASamigov , SRMajidov , FDJurayeva Construction materials and items from science laboratory their work transfer for . Style Guide Tashkent-2018* 6. *IK Domanskoy Construction material izdeliya , Uchebnoe posobie Yekaterinburg 2018g* 7. *AEOdilkhodjayev " Construction materials " Educational manual . T. 2020.* 8. *Khabibullayev Sh.A. " Construction materials " Educational manual . T . 2020 y .* 9. *GOST25898-2020 Material i izdeliya stroitelnie* 10. *Fundamentals of building construction: materials and methods / Edward* 11. *Allen and Joseph Iano . Description: Seventh edition. | Hoboken, NJ: Wiley, [2019]*
Reviewers	*B. K. Rakhmanov - Fergana State Technical University, Department of " Construction Materials and Products " Associate Professor (DSc);* *Kh.Murodov – EXPOFAR MCJ leader ;*