Федеральное государственное автономное образовательное учреждение высшего образования «Российский университет дружбы народов»

Инженерная академия

АННОТАЦИЯ УЧЕБНОЙ ДИСЦИПЛИНЫ

Образовательная программа
08.04.01 Civil Engineering / Строительство

08.04.01 Civil Engineering and Built Environment / Строительная инженерия и построенная среда

(наименование образовательной программы (профиль, специализация)

Наименование дисциплины	***Problem solving techniques in Civil Engineering / Методы решения научно-технических задач в строительстве***
Объём дисциплины	**3 ЗЕ (108 час.)**
Краткое содержание дисциплины	
Название разделов (тем) дисциплины	**Краткое содержание разделов (тем) дисциплины:**
Theoretical studies	Science as a continuously evolving system of knowledge of objective laws of nature, society and thinking. The goal of science. Scientific research. Purposes of scientific research. The theoretical studies. Applied research. Technical and technological development. The purpose of development. Scientific and technical information. The scientific direction. The scientific problem. The wording of the problem and making hypotheses. Scientific theme.
Experimental studies	The basics of methodology of experimental studies. Natural experiments. Artificial experiments. The computational experiments. Laboratory experiment. Full-scale experiment. Research (search) experiment. The goals and objectives of experimental research. Experiment planning. The planning matrix. Regression analysis. A factorial experiment.
Development of technical and technological solutions scientific and technical problems.	Copyright. Patent law. The invention. Useful model. An industrial design. Application for intellectual property object. Methods of preparing the patent application. A patent search. Selection of unique. Criticism of peers. Selection of the prototype. Criticism of the prototype. Drawing description.
Processing and analysis of research results	Comparison of results of theoretical and experimental studies. The matching criteria. Criteria of adequacy of theoretical and experimental dependencies. Mathematical processing of experimental data. Analysis of experimental results. Preparation of research results for publication and scientific periodicals. Scientific report. Abstract. Dissertation.

Разработчик:
Профессор департамента строительства  В.В. Галишникова

Директор департамента строительства  В.В. Галишникова

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(наименование образовательной программы (профиль, специализация)

Наименование дисциплины	***Project management***
Объём дисциплины	**4 ЗЕ (144 час.)**
Краткое содержание дисциплины	
Название разделов (тем) дисциплины	**Краткое содержание разделов (тем) дисциплины:**
Basic concepts of the project	Definition of the project. Signs of the project. Classification of projects. Portfolio of projects. Content (subject area) of the project. Initiation of the project. Goals, objectives, strategies, results and success criteria of an investment construction project. The charter of the project. The life cycle of the investment construction project. The life cycle of a property. The environment of the investment construction project. Participants (stakeholders) of the project.
Fundamentals of the methodology for managing of investment construction projects	Definition of project management. Project-oriented management. Managed parameters of the investment construction project. Design triangle. The project management system model. The history of the emergence and development of project management methodology. Standards and norms for project management. Certification of project management specialists. Application of project management methods
Fundamentals of planning, control and regulation of investment construction projects.	The essence, basic principles and classification of project planning. Stages and processes of project planning. Planning levels for an investment construction project. Integrated (strategic) project planning. Milestone Planning. Detailed (tactical) and operational planning. Planning errors. Factors affecting the success of project planning. Documenting an investment construction plan project. Basic concepts and principles of control

	and regulation of projects. Processes and stages of control and regulation of a construction project. Reports.
Resource and cost management of construction projects.	Types of project resources. Roles project calendars. The relationship between volume, labor and duration. Types of work durations. Stages of resource planning. Functions of need and availability of resources. Analysis of the resource feasibility of the project. Resource conflicts and methods for resolving them.
Project analysis and the basis of financing of investment construction projects.	Project analysis. Project cash flow. Viability and financial feasibility of the project. Fundamentals of project financing. Estimation of cost and budgeting of the project. Sources and organizational forms of project financing. Classification of project financing schemes. Public and private financing of the project.
Assessment of the effectiveness of investment construction projects.	Types of investment project efficiency. The basic principles of evaluating the effectiveness of investment projects. The scheme for evaluating the effectiveness of an investment project. The discount rate. Discounting cash flows. Key performance indicators of the project: net income PV, net present value NPV, cost-effectiveness index, present value index of discounted costs PI, internal rate of return IRR, payback period, payback period taking into account discounting.
Organizational structures for managing investment construction projects.	The concept of the organizational structure of project management. Principles of organizational design. Types of organizational structures of the project. Project management systems. EPC and EPCM companies. Project management team. The project team. Project Manager. Project director. Project Board Management structures for a project-oriented organization: functional, matrix, design, mixed. Project Management Office.
Supply and contract management of investment construction projects.	Project supply and contract management. Stages of project supply and contract management. Integrated logistics of the project. Concept and life cycle of a contract. Types of contracts and contracts in construction. Planning procurement and contracts. Selection of suppliers and contractors. Assessment of the qualifications of the contractor. The procedure for conducting bidding. Conclusion, administration and

	closing of contracts in construction. Features of placing orders for state and municipal needs. Auction concept in electronic form.
Risk and change management of investment construction projects.	Project risk management. Concept and risk factors. Types of risks. Stages of risk management. Risk management plan. Definition (identification) of risks. Information gathering technologies. Qualitative risk analysis. Quantitative risk analysis. Risk Response Plan. Methods and strategies for responding to risks. Monitoring and control of risks. Project Security Management. Project change management. Approval and approval of changes. Control and coordination of the implementation of changes.

Разработчик:

Старший преподаватель департамента строительства  Т. Дау

Директор департамента строительства  В.В. Галишникова

Федеральное государственное автономное образовательное учреждение высшего образования «Российский университет дружбы народов»

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Специализация:
08.04.01 Civil Engineering and Built Environment / Строительная инженерия и построенная среда

Наименование дисциплины	***Mathematical Modelling***
Объём дисциплины	**3 3E (108 час.)**
Краткое содержание дисциплины	
Название разделов (тем) дисциплины	**Краткое содержание разделов (тем) дисциплины:**
The subject and tasks of the course "mathematical modeling of spatial structures"	Place, purpose and advantage of mathematical modelling in the process of knowledge of objects and natural phenomena. Model, as a tool for the investigation of objects and phenomena and as a tool for managing them. Prerequisites for the successful application of mathematical modelling. Abstract model by R. Kalman. Classification of objects by type of behavior. Analytical and simulation models. Stages of mathematical modelling. Historical experience in the formation of mathematical models and solving practical problems by means of mathematics. The task of the trajectory of a ray of light reflecting from a mirror. The problem of the trajectory of a refractive ray of light. Brachistochrone problem. Models based on the principle of least action and the principle of equilibrium.
Basic fundamental laws in mechanics	Principles of causality. Equations of state. Postulates about space and time. The law of conservation. The least action. The principle of Lagrange. Hamilton-Ostrogradsky principle. Stable and unstable equilibrium. Euler equations. Principle d'Alembert.
The concept of a mathematical model	The concept of the model of the object or phenomenon. Mathematical model. The requirement for a mathematical model. General technology for solving practical problems using mathematics. The sequence of construction and testing of mathematical models on the examples of the simplest problems of mechanics: stretching and

	compression of the beam. Bending of the beam, loss of stability of the beam. The test of a mathematical model is an assessment of the state of an object. Models for controlling the parameters of objects and phenomena. The multiplicity of questions about the manifestations of objects and phenomena and the generality of models. Check the adequacy of mathematical models. Simplified models.
Formation of mathematical models	Ideas used as the basis of mathematical models. Reflection of properties and characteristics of objects in a mathematical model. Idealization and abstraction. Mathematical language of the formation of a practical problem. Characteristic concepts for describing objects and phenomena (energy, mass, force, space, time, etc.) and qualitative and quantitative representation in models. Covariance Tasks of analysis and synthesis. Determining relationships and empirical dependencies in mathematical models. Dimension of the quantities and formulas expressing the problem. Simplification and refinement of the mathematical model. The dimension of the tasks. Analysis of the impact of simplifications and clarifications.
Types of mathematical models	Structural and functional models. Discrete and continuous, linear and nonlinear models. Simulation of partial differential equations. The problem of the shapes of the searchlight mirror. Linearization. Variational models. Likely models. Other types of models. Hierarchy of mathematical models. Mathematics Mode Closure
Methods for solving problems formulated by mathematical models.	The investigation of the mathematical problem generated by the created mathematical model. Existence, multiplicity and uniqueness of solutions. The choice of mathematical methods for solving the formulated problem. Exact and close solution. Variational tasks. The boundary value problem and the Cauchy problem. Analytical solution. Asymptotic expansions. Ritz method. Bubnov-Galerkin Method. Discretization of tasks. Euler method. Reduction of the solution to the solution of problems of linear algebra. Finite difference method and finite element method. Systems of linear equations and their solution. The problem of eigenvalues. Search for extremums of functions and functionals. Newton's method for solving nonlinear problems. Research solutions. Selection and control of solution accuracy. Dimensional control. Verification of models.
The use of computing in mathematical modelling.	The concept of computational experiment. Triad "model-algorithm-program". Numerical simulation. A preliminary investigation of mathemati-

	cal models. Qualitative analysis. Dimensionless analysis of the problem. Approximate solutions. Exact solutions. Algorithm solutions. Programming and problem solving software. Carrying out computer calculations and their analysis. Planning calculations. Processing calculation results. Refinement of computational models.
Mathematical modelling in problems of mechanics of a deformable solid	Representation of a solid body as a continuum. Other simplifying hypotheses and assumptions. Elastic body Plastic body Internal forces, stresses, deformations, displacements. Stress-strain state of a solid. Strain tensor, stress tensor and principal stress. Hooke's law as an equation of state. Static equilibrium equations and equilibrium equations in motion. Compatibility equations of deformations. The expression of the change of energy. The formulation and solution of problems of statics and dynamics of a rigid body. Two-dimensional and one-dimensional problems of the theory of elasticity. Construction of mathematical models and solving problems of mechanics of liquids and gases. Ideal incompressible fluid. Viscous fluid. Perfect gas. Setting goals. Euler's equation for the motion of an ideal fluid. Tasks hydrostatics. Perfect fluid movement and viscous fluid movement. Navier-Stokes equation. Waves in liquid and gas.
Problems of finding the optimal solution and their mathematical modelling	Ideas involved in the construction of mathematical models of optimization problems. Variational tasks. The formulation and solution of the Brachistochrone problem. The simplest problems of finding the optimal solution and solving them mathematically. Tasks on the best size of a tin can. Economic tasks in construction. Mathematical programming. Modelling by goal function and constraint inequalities.

Разработчик:

Доцент департамента строительства  Жиль-улбе Матье

Директор департамента строительства  В.В. Галишникова

Федеральное государственное автономное образовательное учреждение высшего образования «Российский университет дружбы народов»

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Наименование дисциплины	***Fundamentals of the Finite Element Method***
Объём дисциплины	**4 ЗЕ (144 час.)**
Краткое содержание дисциплины	
Название разделов (тем) дисциплины	**Краткое содержание разделов (тем) дисциплины:**
Plane Stress and Plane Strain Theory	Plane stress and plan strain approximations. Coordinate systems. Displacement of material points. State of strain. State of stress. Stress equilibrium at a point. Constitutive equations. Boundary conditions. Differential form of the governing equations. Weighted residual method. Integral form of the governing equations.
Finite Element Tools	Finite element concept. Description of finite element shape. Quadrilateral elements. Triangular elements. Interpolation of variables in finite elements. Differentiation of functions in finite elements: Differentiation of shape functions. Differentiation of behavioral variables. Integration of functions in finite elements: Integration over quadrilateral elements; Integration over triangular elements. Numerical integration. One-dimensional Gauss integration: Gauss integration in quadrilaterals; Gauss integration in triangles.
Finite Element Networks	Decomposition of a slab. Element shape. Displacement interpolation. Strain interpolation. Element and system stiffness matrices. Element and system body load vectors. Boundary conditions: Shape of the boundary; System boundary load vector; Boundary conditions at nodes. Algebraic governing equations. Assembly and solution of the algebraic system equations. Assembly of the system equations. Structure of the system matrix. Solution of linear equations with profile and status. Accuracy and convergence of the finite element method. Stress computation.
Finite Element Types	Rectangular element with 4 nodes. Constant strain triangular element. Quadrilateral element with 8 nodes. Linear strain triangular element.

Разработчик:

Профессор департамента строительства  В.В. Галишникова

Директор департамента строительства  В.В. Галишникова

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Наименование дисциплины	***Structural Design in Steel / Проектирование стальных строительных конструкций***
Объём дисциплины	**3 ЗЕ (108 час.)**
Краткое содержание дисциплины	
Название разделов (тем) дисциплины	**Краткое содержание разделов (тем) дисциплины:**
Calculation of the transverse frame of the steel framework of a multistory building	Determination of the loads and impacts acting on the transverse frame of the steel framework of a multistory building. The overall calculation of the transverse frame of the steel framework of a multistory building based on a flat FE model. Analysis of the calculation results. The overall calculation of the transverse frame of the steel framework of a multistory building based on the spatial model of the FE model.
Calculation of metal truss	Total FE calculation of metal truss. Analysis of the calculation results. Selection of cross-sections and checking the strength of the elements of the metal truss. Investigation of the stress-strain state of metal truss's joints.

Разработчик:

Профессор департамента строительства В.В. Галишникова

Директор департамента строительства В.В. Галишникова

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Специализация: 08.04.01 Civil Engineering and Built Environment / Строительная инженерия и построенная среда

Наименование дисциплины	***Structural Design in Steel: Special Topics / Проектирование стальных строительных конструкций: Спецкурс***
Объём дисциплины	**4 ЗЕ (144 час.)**
Краткое содержание дисциплины	
Название разделов (тем) дисциплины	**Краткое содержание разделов (тем) дисциплины:**
Calculation of the transverse frame of the steel framework of a multistory building	Determination of the loads and impacts acting on the transverse frame of the steel framework of a multistory building. The overall calculation of the transverse frame of the steel framework of a multistory building based on a flat FE model. Analysis of the calculation results. The overall calculation of the transverse frame of the steel framework of a multistory building based on the spatial model of the FE model.
Calculation of metal truss	Total FE calculation of metal truss. Analysis of the calculation results. Selection of cross-sections and checking the strength of the elements of the metal truss. Investigation of the stress-strain state of metal truss's joints.

Разработчик:

Профессор департамента строительства В.В. Галишникова

Директор департамента строительства В.В. Галишникова

Федеральное государственное автономное образовательное учреждение высшего образования «Российский университет дружбы народов»

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Наименование дисциплины	***Linear theory of elasticity***
Объём дисциплины	**3 Е (108 час.)**
Краткое содержание дисциплины	
Название разделов (тем) дисциплины	**Краткое содержание разделов (тем) дисциплины:**
Equilibrium equations.	The main hypotheses of the theory of elasticity. Equilibrium equations in the rectangular coordinate system. Equilibrium equations in the polar coordinate system. Boundary conditions.
Theory of solving problems of elasticity theory in displacements and stresses.	Deformation theory. Equations of continuity of deformation. The relationship between stresses and deformations. Solution of basic differential equations.
The plane problem of theory of elasticity.	A plane problem in a rectangular coordinate system. A plane problem in the polar coordinate system. Calculative equations in the analyses in stresses and deformations.
Solution of problems of theory of elasticity.	Solution of problems in rectangular coordinate system. Solution of problems in the polar coordinate system.
The theory of bending of plates.	Derivation of the Sophie Germain equations for a thin plate. Calculation of rectangular plates. Calculation of round plates.

Разработчик:

Доцент департамента строительства Ф.В. Рекач

Директор департамента строительства В.В. Галишникова

Федеральное государственное автономное образовательное учреждение высшего образования «Российский университет дружбы народов»

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Наименование дисциплины	***Modelling of construction processes***
Объём дисциплины	**4 ЗЕ (144 час.)**
Краткое содержание дисциплины	
Название разделов (тем) дисциплины	**Краткое содержание разделов (тем) дисциплины:**
1. Main points of modelling of construction processes	1.1. Main stages of buildings construction 1.2. Main points of design of various construction processes.
2. Modelling of underground construction processes	2.1. Underground construction process by slurry wall method 2.2. Underground construction process by top-down method 2.3. Construction of various types of foundations
3. Modelling of cast-in-situ construction processes	3.1. Various types of formwork systems and fields of their applications 3.2. Technology of concrete works 3.3. Concrete curing in various climatic conditions
4. Modelling of construction of high-rise buildings	4.1. Construction of skyscrapers 4.2. Construction of tower buildings 4.3. Construction of high-rise buildings by method of floor lift

Разработчик:

Доцент департамента строительства — _____ — Коротеев Д.Д.
должность, название кафедры — подпись — инициалы, фамилия

Заведующий кафедрой
Директор департамента строительства — Галишникова В.В.

Федеральное государственное автономное образовательное учреждение высшего образования «Российский университет дружбы народов»

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Наименование дисциплины	***Structural Design in Reinforced Concrete / Проектирование железобетонных конструкций***
Объём дисциплины	**3 ЗЕ (108 час.)**
Краткое содержание дисциплины	
Название разделов (тем) дисциплины	**Краткое содержание разделов (тем) дисциплины:**
The basic concepts of the design of reinforced concrete structures.	Historical background. Concrete and reinforced concrete. Advantages of reinforced concrete as a structural material. Design Codes. SI Units and shaded areas. Admixtures. Calculation accuracy. Introduction to Loads. Dead loads. Live loads. Environmental loads. Selection of Design loads. Calculation accuracy.
Flexural and strength analysis of beams according ACI code.	Ultimate or nominal flexural moments. Cracking moment. Elastic stresses-concrete cracked. Design methods. Advantages of Strength Design. Elastic Stresses—Concrete Cracked. Structural Safety. Derivation of beam expressions. Strains in Flexural Members. Balanced sections, tension-Controlled sections, and compression-controlled or brittle sections. Strength reduction or φ Factors. Minimum Percentage of Steel. Balanced steel percentage,
Analysis and design of T-beam and doubly reinforced beams.	Analysis of T-beams. Design of T-beams. Design of T-beams for negative moments. L-shaped beams. Load factors. Design of rectangular beams. Miscellaneous beam considerations. Determining steel area when beam dimensions are predetermined. One-way slabs. Cantilever beams and continuous beams. Analysis of Two-Way slabs with Beams. Design of two-way slabs by the ACI Code. Shear resistance of slabs. Depth

	limitations and stiffness requirements. Analysis of Two-Way slabs with Beams. Design of two-way slabs by the ACI Code. Shear resistance of slabs. Depth limitations and stiffness requirements.
Design of rectangular beam and one-way slabs. Two- ways slabs.	Design of rectangular beam and one-way slabs. Two- ways slabs. Design of rectangular beams. Miscellaneous beam considerations. Determining steel area when beam dimensions are predetermined. One-way slabs. Cantilever beams and continuous beams Design of Doubly Reinforced Beams. Compression steel. Analysis of Two-Way slabs with Beams. Design of two-way slabs by the ACI Code. Shear resistance of slabs. Depth limitations and stiffness requirements. Distribution of Moments in slabs. Design of an interior flat plate. Placing of live loads. Transfer of moments and shears between slabs and columns.
Shear diagonal tension. Torsion.	Introductory Comments on Torsion Shear Stresses in Concrete Beams. Shear Strength of Concrete. Shear Strength of Members Subjected to Axial Forces. Shear cracking of reinforced concrete beam. Behavior of beams with web reinforcement. ACI Code requirements. Design for Shear. Economical Spacing of Stirrups. Shear Friction and Corbels. Torsional reinforcing. Torsional moments that have to be considered in design. Torsional moment strength. Torsional stresses. Design of torsional reinforcing. Additional ACI Requirements
Columns. Design of short columns subject to axial load and bending. Slender columns.	Types of columns. Axial load capacity of columns. Code requirements for cast-in-place Columns. Failure of tied and spiral columns. Design of axially loaded columns. Design formulas. Comments on economical column design. Axial load and bending. The Plastic centroid. Use of interaction Diagrams. Design and analysis of eccentrically loaded columns using interaction Diagrams. Shear in Columns. Slenderness effects. Slender columns in nonsway and sway frames. ACI Code treatments of slenderness Effects. Magnification of column moments in nonsway and sway frames.
Serviceability limit states of the structures	Importance of deflections. Control of deflec-

	tions. Calculation of deflections. Effective moments of Inertia. Long-Term deflections. Simple-Beam deflections. Continuous-beam deflections. Types of cracks. Control of flexural cracks. ACI Code Provisions concerning cracks. Miscellaneous cracks,
Bond, Development lengths, and splices.	Cutting off or bending bars. Bond stresses. Development lengths for tension reinforcing. Development lengths for welded wire fabric in tension. Development lengths for compression bars. Critical sections for development length. Effect of combined shear and moment on development lengths. Effect of shape of moment Diagram on development lengths. Cutting off or bending bars. Bar splices in flexural members. Tension splices. Compression splices. Headed and mechanically anchored bars.
Reinforced concrete masonry. Retaining and Shear walls. Cantilever retaining walls.	Masonry materials. Specified compressive strength of masonry. Maximum flexural tensile reinforcement. Walls with out-of-plane loads—Non–load-bearing walls. Masonry lintels. Walls with out-of-plane loads—Load-bearing. Walls with In-plane loading—Shear walls. ACI provisions for shear walls. Empirical and rational design Methods of walls. Types of retaining walls. Failures of retaining walls. Lateral pressure on retaining walls. Cracks and wall joints. Design of semi gravity retaining Walls
Footings.	Design of wall footings. Plain concrete footings. Rectangular isolated footings. Combined footings. Actual soil pressures. Allowable soil pressures. Design of square isolated footings. Footings subjected to axial loads and moments. Load transfer from columns to footings. Footings supporting round or regular polygon-shaped columns.

Разработчик:

Старший преподаватель департамента строительства Т. Дау

Директор департамента строительства В.В. Галишникова

Федеральное государственное автономное образовательное учреждение высшего образования «Российский университет дружбы народов»

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Специализация: 08.04.01 Civil Engineering and Built Environment / Строительная инженерия и построенная среда

Наименование дисциплины	***Structural Design in Reinforced Concrete: Special Topics / Проектирование железобетонных конструкций: Спецкурс***
Объём дисциплины	**3 ЗЕ (108 час.)**
Краткое содержание дисциплины	
Название разделов (тем) дисциплины	**Краткое содержание разделов (тем) дисциплины:**
The basic concepts of the design of reinforced concrete structures.	Historical background. Concrete and reinforced concrete. Advantages of reinforced concrete as a structural material. Design Codes. SI Units and shaded areas. Admixtures. Calculation accuracy. Introduction to Loads. Dead loads. Live loads. Environmental loads. Selection of Design loads. Calculation accuracy.
Flexural and strength analysis of beams according ACI code.	Ultimate or nominal flexural moments. Cracking moment. Elastic stresses-concrete cracked. Design methods. Advantages of Strength Design. Elastic Stresses—Concrete Cracked. Structural Safety. Derivation of beam expressions. Strains in Flexural Members. Balanced sections, tension-Controlled sections, and compression-controlled or brittle sections. Strength reduction or φ Factors. Minimum Percentage of Steel. Balanced steel percentage,
Analysis and design of T-beam and doubly reinforced beams.	Analysis of T-beams. Design of T-beams. Design of T-beams for negative moments. L-shaped beams. Load factors. Design of rectangular beams. Miscellaneous beam considerations. Determining steel area when beam dimensions are predetermined. One-way slabs. Cantilever beams and continuous beams. Analysis of Two-Way slabs with Beams. Design of two-way slabs by the ACI Code. Shear resistance of slabs. Depth limitations and stiffness requirements. Analysis

	of Two-Way slabs with Beams. Design of two-way slabs by the ACI Code. Shear resistance of slabs. Depth limitations and stiffness requirements.
Design of rectangular beam and one-way slabs. Two- ways slabs.	Design of rectangular beam and one-way slabs. Two- ways slabs. Design of rectangular beams. Miscellaneous beam considerations. Determining steel area when beam dimensions are predetermined. One-way slabs. Cantilever beams and continuous beams Design of Doubly Reinforced Beams. Compression steel. Analysis of Two-Way slabs with Beams. Design of two-way slabs by the ACI Code. Shear resistance of slabs. Depth limitations and stiffness requirements. Distribution of Moments in slabs. Design of an interior flat plate. Placing of live loads. Transfer of moments and shears between slabs and columns.
Shear diagonal tension. Torsion.	Introductory Comments on Torsion Shear Stresses in Concrete Beams. Shear Strength of Concrete. Shear Strength of Members Subjected to Axial Forces. Shear cracking of reinforced concrete beam. Behavior of beams with web reinforcement. ACI Code requirements. Design for Shear. Economical Spacing of Stirrups. Shear Friction and Corbels. Torsional reinforcing. Torsional moments that have to be considered in design. Torsional moment strength. Torsional stresses. Design of torsional reinforcing. Additional ACI Requirements
Columns. Design of short columns subject to axial load and bending. Slender columns.	Types of columns. Axial load capacity of columns. Code requirements for cast-in-place Columns. Failure of tied and spiral columns. Design of axially loaded columns. Design formulas. Comments on economical column design. Axial load and bending. The Plastic centroid. Use of interaction Diagrams. Design and analysis of eccentrically loaded columns using interaction Diagrams. Shear in Columns. Slenderness effects. Slender columns in nonsway and sway frames. ACI Code treatments of slenderness Effects. Magnification of column moments in nonsway and sway frames.
Serviceability limit states of the structures	Importance of deflections. Control of deflections. Calculation of deflections. Effective mo-

	ments of Inertia. Long-Term deflections. Simple-Beam deflections. Continuous-beam deflections. Types of cracks. Control of flexural cracks. ACI Code Provisions concerning cracks. Miscellaneous cracks,
Bond, Development lengths, and splices.	Cutting off or bending bars. Bond stresses. Development lengths for tension reinforcing. Development lengths for welded wire fabric in tension. Development lengths for compression bars. Critical sections for development length. Effect of combined shear and moment on development lengths. Effect of shape of moment Diagram on development lengths. Cutting off or bending bars. Bar splices in flexural members. Tension splices. Compression splices. Headed and mechanically anchored bars.
Reinforced concrete masonry. Retaining and Shear walls. Cantilever retaining walls.	Masonry materials. Specified compressive strength of masonry. Maximum flexural tensile reinforcement. Walls with out-of-plane loads—Non–load-bearing walls. Masonry lintels. Walls with out-of-plane loads—Load-bearing. Walls with In-plane loading—Shear walls. ACI provisions for shear walls. Empirical and rational design Methods of walls. Types of retaining walls. Failures of retaining walls. Lateral pressure on retaining walls. Cracks and wall joints. Design of semi gravity retaining Walls
Footings.	Design of wall footings. Plain concrete footings. Rectangular isolated footings. Combined footings. Actual soil pressures. Allowable soil pressures. Design of square isolated footings. Footings subjected to axial loads and moments. Load transfer from columns to footings. Footings supporting round or regular polygon-shaped columns.

Разработчик:

Старший преподаватель департамента строительства Т. Дау

Директор департамента строительства В.В. Галишникова

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Инженерная академия

АННОТАЦИЯ УЧЕБНОЙ ДИСЦИПЛИНЫ

Образовательная программа
08.04.01 Civil Engineering / Строительство
Специализация: Civil Engineering and Built Environment/
Строительная инженерия и построенная среда
(наименование образовательной программы (профиль, специализация)

Наименование дисциплины	***Nanotechnology in Civil Engineering/ Нанотехнологии в строительстве***
Объём дисциплины	**3 ЗЕ (108 час.)**
Краткое содержание дисциплины	
Название разделов (тем) дисциплины	**Краткое содержание разделов (тем) дисциплины:**
1. Introduction. Basic concepts about nanotechnology and nanoparticles.	The place of nanotechnology in modern society. Definition of nanotechnology as a science. Methods for obtaining various types of nanoparticles.
2. Types of nanoparticles. Basic methods for obtaining nanoparticles.	Various types of nanoparticles: fullerenes, carbon nanotubes (single-layer and multilayer), astralens, carbon, nano-titanium dioxide, nano-silica, etc. Their structure and characteristics.
3. The main areas of application of nanotechnology in the production of building materials and products.	The use of various nanoparticles in the production of new building and finishing materials, road materials, etc.
4. The main aspects of the use of carbon nanoparticles to obtain new types of concrete.	Basic approaches to producing new types of concrete using carbon nanoparticles. The latest developments of modern scientists in this field. Nano concrete for 3-D printing.
5. New types of concrete using nano-titanium dioxide.	Influence of nano titanium dioxide on the properties of modern building materials, including concrete. Obtaining building materials with fundamentally new properties. Self-cleaning concrete.
6. Application of nano-silica to improve the properties of building materials.	Features of the properties of concrete with the addition of nano-silica. Self-compacting concrete.
7. The use of other nanoparticles in the production of building materials. Prospects for the use of nanotechnology in construction.	Modern trends and prospects for the use of nanotechnology in the field of construction and production of modern building materials.

Разработчик:

Доцент департамента строительства С.Л. Шамбина

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Инженерная академия

АННОТАЦИЯ УЧЕБНОЙ ДИСЦИПЛИНЫ[1]

Образовательная программа
08.04.01 Civil Engineering / Строительство
Специализация: 08.04.01 Civil Engineering and Built Environment / Строительная инженерия и построенная среда

Наименование дисциплины	Structural Dynamics
Объём дисциплины	3 ЗЕ (108 час.)
Краткое содержание дисциплины	
Название разделов (тем) дисциплины	Краткое содержание разделов (тем) дисциплины:
Longitudinal bending of a straight rod	Coefficient of longitudinal bending. Condition of stability. Practical calculations of rods for stability. Rational sections of the compressed bars.
Energy method for determining critical forces	Energy method for determining critical forces for rod systems with elastic supports. Stability of systems with one or more degrees of freedom.
Calculation of flat frames for stability by displacement method	The main hypotheses of the displacement method. Canonical equations of the displacement method. Stiffness matrix. Determination of critical forces for plane frames.
Stability of the flat shape of the bending of beams.	Stability of the flat shape of the bending of beams. Calculation of the stability of a flat curved rod of a constant cross section. Lamb's equation for a circular rod.
Calculation of flat frames for stability by the method of forces	Calculation of flat frames for stability by the method of forces. Example of calculating a flat frame for stability by the force method.
Stability of rectangular plates	Stability of rectangular plates. Differential equation of plate bending. Examples of determining critical loads for rectangular plates.
Stability of circular cylindrical shells under axial compression in the case of axisymmetric buckling.	Calculation of the stability of a cylindrical long shell for axial compression and a closed cylindrical shell of finite length.
General information on the dynamics of deformed systems	General concepts. Forces of inertia. The D'Alembert principle. The main types of dynamic load. Dynamic tasks, reduced to tasks of static calculation. Calculation of inertial loads
Hit	Dynamic factor
Oscillations of systems with *n* degrees of freedom	Elastic natural oscillations of systems with one degree of freedom. Forced oscillations of systems with one degree of freedom. Resonance. Attenuation of vibrations. Elastic free oscilla-

	tions of systems with several degrees of freedom.
Free oscillations of rod systems as systems with distributed mass	Free oscillations of beams as systems with distributed mass. Longitudinal oscillations of a rod with distributed mass. The method of displacements in problems on harmonic vibrations of rod systems. Free vibrations of rod systems with distributed mass. Free oscillations of the П-shaped frame.
Calculation of fatigue	Voltage variables. Stress cycle. Fatigue. Curve fatigue. Limit of endurance. The main factors affecting the value of the limit of endurance
Free oscillations of plates and shells	Free vibrations of rectangular plates. Oscillations of cylindrical and spherical shells.

Разработчик:

Профессор департамента строительства В.В. Галишникова

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Специализация: 08.04.01 Civil Engineering and Built Environment / Строительная инженерия и построенная среда

Наименование дисциплины	***Geometric Shaping and Analysis of Shells / Формообразование и расчет оболочек***
Объём дисциплины	**3 3Е (108 час.)**
Краткое содержание дисциплины	
Название разделов (тем) дисциплины	**Краткое содержание разделов (тем) дисциплины:**
Classification and forms of spatial structures	Planar designs. Classification and forms of spatial structures. Signs of static shaping. Kinematic surfaces.
On the design and construction of spatial structures	Structures working "on the span", rigid shells, regular systems, suspended roofs, transforming systems, air-supporting and air-suspended structures. Tent structures. Structural concept. Production, transportation and construction of spatial systems.
Shells of Revolution	Spherical shell. Shells in the form of a single-cavity hyperboloid of revolution. Paraboloid and ellipsoid of revolution. Circular torus Pseudosphere. Catenoid. Globoid. A drop. The mating surfaces of coaxial cylinder and cone.
Ruled shells of zero Gaussian curvature	Conical, cylindrical and torso shells. Build torso developments. Replacement of cylinders, cones and torso surfaces folds. Surfaces of the same slope.
Ruled shells of negative Gaussian curvature	Hyperbolic paraboloid. Conoids. Cylindroids. 5 types of ruled helicoids. Ruled rotary and spiroid surfaces. Catalan Surfaces.
Cyclic surfaces	Channel surfaces. Normal cyclic surfaces. Cyclic surfaces with a parallelism plane. Cyclic surfaces with circles in the planes of the bunch.
Kinematic surfaces	Direct transfer surfaces. Rotative and spiroid surfaces.
Umbrella surfaces and umbrella type surfaces	Wavy type and wavy surfaces. Corrugated surfaces. Corrugated products. Umbrella domes on the cone. Reinforced concrete, metal, tent

	umbrella shells.
Minimal surfaces	Minimal surfaces strung on a rigid support contour. Dome structures made of plastic.
Helicoidal and helical shape shells. Shells in the form of spiral and spiral shape surfaces.	Ordinary screw surfaces. Screw surface variable pitch. Cyclic surface in the cylinder. Helical surfaces with generatrix in the planes of the bunch.
Membrane and cable coatings.	Examples of built structures with membrane and suspended roofs.
Shells in the form of analytically indefinable surfaces	Overview of the constructed structures Constructive forms of wildlife and their influence on the development of fundamentally new spatial structures.
Spatial Composite Structures	Smooth mating of two surfaces. Transformable structures.
Geometrical Shaping of Shells (experimental part)	Manufacturing models that demonstrate the methods of generating the middle surfaces of the shells.

Разработчик:

Доцент департамента строительства  Жиль-улбе Матье

Директор департамента строительства  В.В. Галишникова

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Инженерная академия

АННОТАЦИЯ УЧЕБНОЙ ДИСЦИПЛИНЫ

08,04.01 Civil Engineering / Строительство
Специализация: 08.04.01 Civil Engineering and Built Environment / Строительная инженерия и построенная среда

Наименование дисциплины	***Digital technologies in construction/ Цифровые технологии в строительстве***
Объём дисциплины	**4 ЗЕ (144 часа)**
Краткое содержание дисциплины	
Название разделов (тем) дисциплины	**Краткое содержание разделов (тем) дисциплины:**
Introduction to design computer systems	Design and computing complex SCAD. Preprocessor, processor, postprocessor. SCAD-Office satellite programs: Design and analysis. Design. Auxiliary.
Create a new structural analysis project	Formulation of the problem. Initial data. Processing calculation results. Graphical analysis of the results. Verification of the results.
Solving problems of structural mechanics course: strength and stability: program-satellite KUST.	2D bars system (statically definable beams, statically indeterminable beams, multi-span split and continuous beams, trusses, arches, statically definable and indefinable frames and pillars).Spatial core system (trusses, arches and frames).Calculation of structures on an elastic base (beams and slabs).
Solving problems of reinforced concrete structures-programs-satellites ARBAT and MONOLITH	Beam reinforcement. Plate reinforcement. Reinforcement of the column. Reinforcement of Foundation and retaining wall and Foundation beam
Solving problems of metal structures course - programs-satellites CRYSTAL and COMET.	Analysis and design of trusses, flat and spatial frames, split and continuous beams, columns and base plates.Analysis and design of nodes of trusses of column bases. Local stability analysis.
Solving problems of wooden structures course: Program-Satellite DECOR	Analysis of geometric characteristics and cross-section resistance. The analysis of the resistance of the connection and the estimated lengths. Analysis of continuous girders, cantilever girders. Analysis of beams and columns. Analysis of the truss and its elements.
Foundations' analysis - Program-satellite, ZAPOS	Roll and draft Foundation. Odds of bed and pressure limit when analyzing the deformations. Bearing capacity, settlement, and sludge piles.
Building and analysis of thin elastic shells by finite element method: SCAD and KUST sat-	Solution of problems of analysis of thin elastic shells in the form of spherical, cylindrical

ellite Programs	surfaces and surfaces of the second order.
Building layout and subsequent finite element analysis: SCAD and FORUM satellite programs	The basics of the split surface of the shell into finite elements. Computer analysis of shells. Graph-analytical representation of the results.

Разработчик:

Доцент департамента строительства  Жиль-улбе Матье

Директор департамента строительства  В.В. Галишникова

Федеральное государственное автономное образовательное учреждение высшего образования «Российский университет дружбы народов»

Инженерная академия

АННОТАЦИЯ УЧЕБНОЙ ДИСЦИПЛИНЫ
Образовательная программа

08.04.01 Civil Engineering / Строительство
Специализация: 08.04.01 Civil Engineering and Built Environment / Строительная инженерия и построенная среда

Наименование дисциплины	***Mathematical methods of experimental data processing/ Математические методы обработки экспериментальных данных***
Объём дисциплины	**3 ЗЕ (108 час.)**
Краткое содержание дисциплины	
Название разделов (тем) дисциплины	**Краткое содержание разделов (тем) дисциплины:**
1. Introduction. General concepts.	Basic concept. Partial differential equations. Reduction of the equations to the canonical form. Solution of problems.
2. Equations of hyperbolic type. General.	a. Derivation of the string oscillation equation. The concept of setting boundary and initial conditions. b. D'alembert's Method. A physical interpretation of the method of D'alembert. Correctness of the problem statement.
3. Solution of Equations of hyperbolic type.	a. The solution of the problem of oscillations of a bounded string by the Fourier method. b. The solution of the inhomogeneous equation by Fourier method. c. Solution of the oscillation equation when the number of variables is greater than two. A special case of solving the wave equation in space.
4. Equations of parabolic type.	a. The solution of the first boundary problem by Fourier method. b. Some heat conduction problems when the number of variables is greater than two. c. Heat distribution over the cross section of a homogeneous cylinder
5. Solution of Equations of elliptic type.	a. Some problems leading to equations of elliptic type. b. Separating variables method for the Dirichlet problem

Разработчик:

Доцент департамента строительства _____ Рекач Ф.В.

Директор департамента строительства _____ Галишникова В.В

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Инженерная академия

АННОТАЦИЯ УЧЕБНОЙ ДИСЦИПЛИНЫ

Образовательная программа
08.04.01 Civil Engineering / Строительство
Специализация: 08.04.01 Civil Engineering and Built Environment / Строительная инженерия и построенная среда

Наименование дисциплины	***Numerical methods for Civil Engineering/ Численные и численно-аналитические методы в строительных задачах***
Объём дисциплины	**3 ЗЕ (108 час.)**
Краткое содержание дисциплины	
Название разделов (тем) дисциплины	**Краткое содержание разделов (тем) дисциплины:**
Sample characteristics as random variables. Methods for presenting the results of experiments.	Discrete and continuous random variables. Selective characteristics. The laws of distribution of random variables. Computer simulation of a random variable with a given distribution law: normal and log-normal distribution, Poisson distribution, equal probability distribution.
Methods of dropping measurement errors.	Rule "3 Sigma". Criterion for Chouvenet. Criteria of Romanovsky, Irvin, Dickson, variational scale.
Methods for testing statistical hypotheses. Parametric and nonparametric criteria.	The concept of a parametric criterion. Power criterion. Confidence. Errors of the first and second kind. The use of computer technology for the elimination of erroneous values.
Fundamentals of optimization. Construction of mathematical models.	The concept of the objective function, the limitations of the area of decision-making. The Brandon method. Estimation of adequacy of the constructed models.
Methods of decision-making in conditions of uncertainty and multicriteria.	Criteria for Wald, Laplace, Hurwitz, Se-Vidge, mixed criteria.
Ranking factors. Processing of survey results.	Ranking methods. Calculation of the coefficient of concord.
Methods of cluster analysis. Ways to form clusters.	Calculation of the characteristics of clusters - centers, dispersion, radius.

Разработчик:
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Образовательная программа
08.04.01 Civil Engineering / Строительство
Специализация: 08.04.01 Civil Engineering and Built Environment / Строительная инженерия и построенная среда

Наименование дисциплины	***Applications of Finite Element Method for Civil Engineering problems / Применение метода конечных элементов в строительных задачах***
Объём дисциплины	**4 ЗЕ (144 час.)**
Краткое содержание дисциплины	
Название разделов (тем) дисциплины	**Краткое содержание разделов (тем) дисциплины:**
Application of Finite Element method in Civil Engineering	Introduction to various types of elements (bar, plain stress/strain, plates and shells) and their applications. Undertake non-linear buckling analysis using beam and plate elements. Analysis and design of steel and reinforced structures. Geometry idealization, advanced meshing, identification of FE based theory and tools for problem solving, linear and non-linear Finite Element (FE) analyses, static and dynamic FE formulations in time and frequency domain, guidance in static, dynamic, contact, buckling and mechanism analysis, evaluation of structural integrity of components with geometrical discontinuities.
Applications in ANSYS	Introduction to ANSYS. Library of finite elements: Geometry preparation. Pre-processing, Structural analysis, Post-processing. Meshing, Mechanical basics, linear structural analysis, Analysis of a simply bending of beam, Short column bending, Torsional stress, Contact spring force & spring stiffness.
Applications in SIMULIA Abaqus	Introduction. Structure and capabilities of Abaqus/CAE. Library of finite elements. Analysis of a simply supported beam for the action of uniformly distributed static load. Analysis of a truss for free vibrations and stability. Analysis of a rectangular slab for static uniformly distributed load and free vibrations. Stress-strain state of the slab.Analysis of a rivet joint of a steel structure.

Разработчик:

Профессор департамента строительства В.Н. Сидоров

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Образовательная программа
08.04.01 Civil Engineering / Строительство
Специализация: 08.04.01 Civil Engineering and Built Environment / Строительная инженерия и построенная среда

Наименование дисциплины	***Sustainability in Civil Engineering / Экоустойчивое строительство***
Объём дисциплины	**3 ЗЕ (108 час.)**
Краткое содержание дисциплины	
Название разделов (тем) дисциплины	**Краткое содержание разделов (тем) дисциплины:**
Introduction.	Definition of ecology. Definition of industry. Definition of industrial ecology. Historical context.
Engineering decisions for sustainability.	Biomimicry, industrial symbiosis, ecological engineering, green infrastructure, techno-ecological synergy. Definitions and samples.
Sustainable building design.	Design and characteristics of sustainable buildings. Off-grid buildings, Passive systems, Energy effective heating cooling systems. Sample buildings.
Brief presentations of students on applied sustainable solutions.	Nanotechnology in industrial ecology. Energy simulation and life cycle assessment for buildings. BIM to decrease environmental impact.
Review of last two years' publications on the topic.	Elsevier, SpringerLink, etc.

Разработчик:

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Инженерная академия

АННОТАЦИЯ УЧЕБНОЙ ДИСЦИПЛИНЫ

Образовательная программа
08.04.01 Civil Engineering / Строительство
Специализация: 08.04.01 Civil Engineering and Built Environment / Строительная инженерия и построенная среда

Наименование дисциплины	***Building materials: Special Topics / Строительные материалы: Спецкурс***
Объём дисциплины	**3 ЗЕ (108 час.)**
Краткое содержание дисциплины	
Название разделов (тем) дисциплины	**Краткое содержание разделов (тем) дисциплины:**
Sustainable building materials, part-1	Alternative building materials. Materials from different cycles: Agricultural straw bale, municipal waste, etc. Sample materials and buildings.
Sustainable building materials, part-2	Secondary materials. Reused, reclaimed, and recycled building materials: Reused bricks, recycled concrete, reclaimed steel, etc. Sample buildings.
Environmental assessment tools for buildings	Breeam, Leed, etc. Sample reports and findings.
Brief presentations of students on applied sustainable materials.	Timbercrete. Coconut shell as concrete coarse aggregates. Recycled Aggregates in Concrete. Mycelium in Construction. Etc.
Review of last two years' publications on the topic.	Elsevier, SpringerLink, etc.

Разработчик:

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Образовательная программа
08.04.01 Civil Engineering / Строительство
Специализация: 08.04.01 Civil Engineering and Built Environment / Строительная инженерия и построенная среда

Наименование дисциплины	***Optimization Methods in Civil Engineering / Методы оптимизации в строительстве***
Объём дисциплины	**3 ЗЕ (108 час.)**
Краткое содержание дисциплины	
Название разделов (тем) дисциплины	**Краткое содержание разделов (тем) дисциплины:**
Introduction and Basic Concept	Historical Development and Introduction to the course and its importance; Formulation of different types of structural optimization problems; Optimization techniques: classical and advanced techniques
Optimization using Calculus	Optimization of function of one variable and multiple variables; Gradient vectors; Optimization of function of multiple variables subject to equality constraints; Classical optimization; Lagrange multiplier technique and Kuhn-Tucker conditions multiple variables subject to equality constraints; Hessian matrix formulation; Eigen values.
Linear and Dynamic Programming and their applications	Standard form of linear and Dynamic programming problem; application of softwares for solving linear and dynamic optimization problems using graphical and simplex methods; Problem formulation and application in Design of continuous beam and Optimal geometric layout of a truss.

Разработчик:

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Инженерная академия

АННОТАЦИЯ УЧЕБНОЙ ДИСЦИПЛИНЫ

Образовательная программа
08.04.01 Civil Engineering / Строительство
Специализация: 08.04.01 Civil Engineering and Built Environment / Строительная инженерия и построенная среда

Наименование дисциплины	***Building Physics / Строительная физика***
Объём дисциплины	**3 ЗЕ (108 час.)**
Краткое содержание дисциплины	
Название разделов (тем) дисциплины	**Краткое содержание разделов (тем) дисциплины:**
Introduction Building Physics	Introduction of common structural components and detailed solutions for building projects. The course introduces indoor and outdoor climate, heat transfer including introduction to energy use in buildings, moisture transfer, acoustics and lighting.
Physical aspects and characteristics of building	The practical understanding of various structural damage and to find and explain technical solutions; heat and sound insulation, moisture control, and fire protection, and focuses on constructional details within design, construction, and utilization of buildings. Theory and simple calculation methods will be introduced and used to evaluate buildings and building constructions against the National Building Code and other requirements.

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(наименование образовательной программы (профиль, специализация)

Наименование дисциплины	***BIM-Technology in Construction Management / BIM-технологии в управлении строительством***
Объём дисциплины	**3 ЗЕ (108 часа)**
Краткое содержание дисциплины	
Название разделов (тем) дисциплины	**Краткое содержание разделов (тем) дисциплины:**
Introduction to Buildings & Systems	Building components and systems (architectural, MEP, structural) Building vocabulary Building drawings, specifications Roles of stakeholders
BIM fundamentals	What is BIM? How can BIM be a part of the building design process? BIM vs. 3D CAD Evolution and development of BIM & object-based parametric modelling BIM platforms
Modelling Building Elements	Mass and concept modelling Detailed modelling Creating, importing and modifying families of objects and elements Creating plans, sections, details, schedules, cover page

Разработчик:
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Наименование дисциплины	***Life Cycle Economics of Buildings / Экономика жизненного цикла зданий***
Объём дисциплины	**4 ЗЕ (144 часа)**
Краткое содержание дисциплины	
Название разделов (тем) дисциплины	**Краткое содержание разделов (тем) дисциплины:**
Time value of money	Concepts of engineering economics analysis Single payment Uniform series payments Arithmetic gradient uniform payments
Economic Evaluation Of Alternatives	Life cycle costing Present worth analysis Equivalent uniform annual worth analysis Rate of return method Benefit/Cost ratio method
Applications	Depreciation Estimating equipment costs Sensitivity analysis

Разработчик:
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Образовательная программа
08.04.01 Civil Engineering / Строительство

Специализация: Civil Engineering and Built Environment /
Строительная инженерия и построенная среда
(наименование образовательной программы (профиль, специализация)

Наименование дисциплины	***Engineering Systems of Buildings / Инженерные системы зданий***
Объём дисциплины	**3 ЗЕ (108 час.)**
Краткое содержание дисциплины	
Название разделов (тем) дисциплины	**Краткое содержание разделов (тем) дисциплины:**
Introduction to Systems Engineering;	Technical and management aspects. A study of the systems acquisition life cycle, alternatives and models in decision making, project cost estimation, project schedule and tracking techniques, reliability analyses, trade off analyses, models for economic evaluation, design for sustainability, design for manufacturability, design for manageability.
Technical and management aspects	It investigates the interrelationship between the system engineering and project management as they work together at the project team level and combine to optimize system effectiveness, enhance project success and reduce risk. Provides a top-down view for engineers to follow and be able to streamline the system engineering process and reduce costs. Additional emphasis is placed on the improvement of systems now in existence. An iterative process of analysis, evaluation, feedback, and modification will be emphasized to show how most systems in existence can be improved in their effectiveness, and stakeholder satisfaction.

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Инженерная академия

АННОТАЦИЯ УЧЕБНОЙ ДИСЦИПЛИНЫ

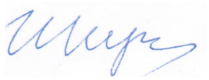
Образовательная программа
08.04.01 «Строительство / Civil Engineering» подготовки Инженерной академии
По специальности
08.04.01 Civil Engineering and Built Environment / Строительная инженерия и построенная среда

Наименование дисциплины	**Русский язык в профессиональной деятельности магистра / Professional Russian**
Объём дисциплины	**6 ЗЕ (192 час.)**
Краткое содержание дисциплины	
Название разделов (модулей) дисциплины	**Краткое содержание разделов (тем) дисциплины:**
Вводный фонетико-грамматический курс.	Русский алфавит. Приветствие. Конструкция *Кто это?* Личные местоимения. Знакомство. Названия продуктов. Конструкции *Что это? Это молоко? Да, это молоко. Я (не) ем …, я (не) люблю….* Числительные 1 – 1000. Конструкция *Сколько стоит?* Наречия места (*тут, там*, *справа, рядом* и т. п.). Вопросительные предложения со словом *где?*
Элементарный уровень.	Род имен существительных. Притяжательные местоимения. Наименования лиц мужского и женского пола. Конструкции *Что такое …? Что значит …? Как по- русски …?* Названия предметов окружающей реальности. Образование множественного числа существительных. Выражение времени в простом предложении. Наречия времени, названия дней недели. Винительный падеж объекта, окончания существительных в винительном падеже. Понятие о русском глаголе. Глаголы *быть, хотеть, родиться, жить, работать, отдыхать, учиться, говорить, учить, понимать, сказать, знать.* Конструкции со словом *должен (должен +инфинитив).* Временная система русского глагола. Безличные конструкции со словами *можно, нужно, нельзя.* Глаголы движения. Этикет телефонного разговора. Винительный и родительный падеж направления. Лексическая тема «Здоровье», визит к врачу.
Базовый уровень.	Виды глагола. Систематизация падежей: предложный, винительный, дательный, родительный и творительный падежи и их основные значения.

Разработчики:

профессор кафедры русского языка
Инженерной академии **Н.С.Новикова**

Заведующий кафедрой русского языка



Инженерной академии **И.А.Пугачев**