Faculty of Civil Engineering and Architecture

Section of Architecture

Study Program

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|  | **TABULAR PRESENTATION OF**  **CURRICULA BY ACADEMIC YEAR** |  |  | |  | |
|  | **SECTION OF ARCHITECTURE** |  |  | |  | |
|  | **VITI I** |  | **Semester I** | | **Semester II** | |
| Nr. | **Lenda** | S | L+U h/j | L+U h/s | L+U h/j | L+U h/s |
|  | Architectural Drawing | 1 | 1+3 | 15+45 |  |  |
|  | Descriptive Geometry | 2 | 3+3 | 45+45 | 3+3 | 45+45 |
|  | Hand Drawing I | 2 | 2+2 | 30+30 | 1+2 | 15+30 |
|  | The Fundamentals of Architectural Design I | 2 | 2+2 | 30+30 | 2+2 | 30+30 |
|  | Architectural Structures I | 2 | 2+2 | 30+30 | 2+4 | 30+60 |
|  | Mathematics | 2 | 2+3 | 30+45 | 2+2 | 30+30 |
|  | Construction Materials | 1 |  |  | 2+1 | 30+15 |
|  | The Fundamentals of GND and CSD I | 2 | 2+0 | 30+0 | 2+0 | 30+0 |
|  | The Fundamentals Marxist Philosophy | 2 | 2+0 | 30+0 | 2+0 | 30+0 |
|  | Total: | 16 | 31 | 465 | 30 | 450 |
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|  | **VITI II** |  | **Semester III** | | **Semester IV** | |
| Nr. | **Lenda** | S | L+U h/j | L+U h/s | L+U h/j | L+U h/s |
|  | Geometric Perspective | 1 | 2+3 | 30+45 |  |  |
|  | Hand Drawing II | 2 | 1+2 | 15+30 | 1+2 | 15+30 |
|  | The Fundamentals of Architectural Design II | 2 | 2+3 | 30+45 | 2+3 | 30+45 |
|  | Architectural Structures II | 2 | 2+3 | 30+45 | 2+3 | 30+45 |
|  | History of Architecture I | 2 | 2+3 | 30+45 | 2+3 | 30+45 |
|  | Mechanics | 1 | 2+2 | 30+30 |  |  |
|  | The Resistance of Materials | 1 |  |  | 2+2 | 30+30 |
|  | Geodesy | 1 |  |  | 2+1 | 30+15 |
|  | Sociology | 2 | 2+0 | 30+0 | 2+0 | 30+0 |
|  | The Fundamentals of GND and CSD II | 2 | 2+0 | 30+0 | 2+0 | 30+0 |
|  | Total: | 16 | 31 | 465 | 29 | 435 |
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|  | **VITI III** |  | **Semester V** | | **Semester VI** | |
| Nr. | **Lenda** | S | L+U h/j | L+U h/s | L+U h/j | L+U h/s |
|  | Design of Housing Buildings | 2 | 3+4 | 30+60 | 2+3 | 30+45 |
|  | Design of Public Buildings | 1 |  |  | 2+3 | 30+45 |
|  | Architectural Structures III | 2 | 2+2 | 30+30 | 1+2 | 15+30 |
|  | The History of Architecture II | 2 | 3+0 | 45+0 | 2+0 | 30+0 |
|  | History of Art | 2 | 2+0 | 30+0 | 2+0 | 30+0 |
|  | The Fundamentals of Urban Design | 1 |  |  | 2+3 | 30+45 |
|  | The Statics of Architectural Structures | 2 | 2+3 | 30+45 | 2+3 | 30+45 |
|  | Wooden Structures | 1 |  |  | 2+1 | 30+15 |
|  | Installations Water supply, Electric, Mechanical |  |  |  |  |  |
|  | Water supply and waste water installations | 1 | 2+1 | 30+15 |  |  |
|  | Electric Installations | 1 | 1+1 | 15+15 |  |  |
|  | Mechanical installations | 1 | 1+1 | 15+15 |  |  |
|  | Programming | 1 | 2+2 | 30+30 |  |  |
|  | Total: | 17 | 32 | 465 | 30 | 450 |
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|  | **VITI IV** |  | **Semester VII** | | **Semester VIII** | |
| Nr. | **Lenda** | S | L+U h/j | L+U h/s | L+U h/j | L+U h/s |
|  | Design of Housing Buildings | 1 | 1+4 | 15+60 |  |  |
|  | Design of Public Buildings | 2 | 2+3 | 30+45 | 2+4 | 30+60 |
|  | Design of Industrial Buildings | 2 | 2+3 | 30+45 | 2+3 | 30+45 |
|  | Urban Design I | 2 | 3+3 | 45+45 | 2+4 | 30+60 |
|  | Concrete Structures | 2 | 2+3 | 30+45 | 2+3 | 30+45 |
|  | Metal Structures | 1 | 2+1 | 30+15 |  |  |
|  | Spatial Structures | 1 |  |  | 2+1 | 30+15 |
|  | Foundation Structures | 1 |  |  | 2+0 | 30+0 |
|  | Organization and Construction Technology | 1 |  |  | 2+2 | 30+30 |
|  | Total: | 13 | 29 | 435 | 31 | 465 |
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|  | **VITI V** |  | **Semester IX** | | **Semester X** | |
| Nr. | **Lenda** | S | L+U h/j | L+U h/s | L+U h/j | L+U h/s |
|  | Design of Public Buildings | 1 | 2+4 | 30+60 |  |  |
|  | Design of Industrial Buildings | 1 | 2+4 | 30+60 |  |  |
|  | Urban Design II | 1 | 2+4 | 30+60 |  |  |
|  | Interior Design | 1 | 2+3 | 30+45 |  |  |
|  | Organization and Construction Technology | 1 | 2+4 | 30+60 |  |  |
|  | Diploma | 1 |  |  | 30 | 450 |
|  | Total: | 5 | 29 | 435 | 30 | 450 |
|  |  |  |  |  |  |  |
| L | - lectures |  |  |  |  |  |
| U | - exercises |  |  |  |  |  |
| h/j | - hours per week |  |  |  |  |  |
| h/s | - hours per semester |  |  |  |  |  |
| S | - number of semesters per subject |  |  |  |  |  |

CURRICULA FOR EACH SUBJECT

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|  | **Architectural Drawing** |  |  |  |
| **One (1) Semester** | L+E h/w | L+E h/s | Total h |
| Semester I | 1+3 | 15+45 | 60 |
| Semester I  Discourses and Practical work  Graphic language of architectural drawing instruments and drawing materials; Organization of working surfaces;  Geometric constructions;  Elements of architectural composition: line; surface; volume.  Graphic symbols of architectural drawing.  Anatomy of letters and numbers;  Methods for the determination of architectural balance; surface:  linear materialization; texture;  Legends of materials; symbols and their application;  Presentation of function, structure and form in architectural drawing.  Drawing and communication; drawing and convention; drawing and presentation; presentation solution; presentation technique.  EXERCISES:  Analyse of structure and form of the letters and numbers. Methods for setting the visual balance;  Letters and numbers as architectural message symbols and in architecture itself.  Elements of architectural composition;  Element analysis of the architectural composition; element presentation of the architectural composition. Architectural presentation techniques;  The linear materialization of the architectural composition; simulations;  Analog models. | | | |
|  | **Descriptive Geometry** | | | |
| **Two (2) Semesters** | L+E h/w | L+E h/s | Total h |
| Semester I | 3+3 | 45+45 | 90 |
| Semester II | 3+3 | 45+45 | 90 |
| Semester I and II  Introduction:  Projective Methods  Point.  Point Projection. Quadrants. Octants.  The line. Projection of oblique line; projection of lines on particular position. Line projection on particular point. Projection of two lines. Determining the line traces on projection planes.  Plane.  Plane Projection. Plane traces. The projection of the plane determined by a line and a point. Planes projections determined by two lines. Intersection of two planes. Intersection of line and plane.  The transformation method.  Transformation of a point, line, geometric shape and transforming of a geometric solids.  Rotation method. Rotation of the point, line and a solid. Method of plane alignment.  Alignment and affinity  Intersection  Intersection of polyhedron and revolved solids. Intersection of polyhedral solid with line.  Intersection of polyhedral solids. Intersection of revolved solids. Incline axonometric.  Roofs.  Determining the intersection of ordinary and complex roof plains.  Cast shadows in orthogonal and inclined projection.  Roads. | | | |

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|  | **Hand Drawing I** | | | |
|  | **Two (2) Semesters** | L+E h/w | L+E h/s | Total h |
|  | Semester I | 2+2 | 30+30 | 60 |
|  | Semester II | 1+2 | 15+30 | 45 |
|  | Semester I and II  Lecturing, drawing and sketching, correction.  Surface,  Line  Form  Simple still life, composed of geometric shapes and surfaces  Linear compound, consisting of different elements  Valeur and valeuristic rate  Texture  Still life, classic portrait (alq) and drapery  Study of volume with light and shadow. | | | |
|  | **The Fundamentals of Architectural Design I** | | | |
|  | **Two (2) Semesters** | L+E h/w | L+E h/s | Total h |
|  | Semester I | 2+2 | 30+30 | 60 |
|  | Semester II | 2+2 | 30+30 | 60 |
|  | Semester I and II  Introduction, What's architecture? Modem society developments and their impact in the architecture)  Analytical review of the basic components of Architecture, understanding of multiple architectural creativity and analysis of architectural works  Analysis, elements and function of the dwelling and physical environment factors of influence on architectural design.  Language of Architecture (visual perception, Colors, Rhythm, Masses, Proportions, Sequences, Character/nature, Expression through Construction Materials) atmosphere and air movements, microclimate conditions, Insolation  PRACTICAL WORK | | | |

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|  | **Architectural Structures I** | | | |
|  | **Two (2) Semesters** | L+E h/w | L+E h/s | Total h |
|  | Semester I | 2+2 | 30+30 | 60 |
|  | Semester II | 2+4 | 30+60 | 90 |
|  | Semester I  Introduction, concept and short history of structures  Structural building elements:  main structural elements, the buildings components, shape and structures  Ground floor buildings. Multi-story buildings  Load-bearing wall system:  classical load-bearing wall system, contemporary load-bearing wall system  **Skeleton structural system**:  high-rise buildings; industrial buildings; tract housing, shear structures, core.  Combined system.  Spatial structural systems and high technology buildings  **Foundations:**  foundation design, types, materials, deep foundations, shallow foundations  **Moisture and thermal protection**, groundwater and drainage  **Movement and partition joints** in buildings. Joints: types, function, design  Semester II  Brickwork- masonry,  masonry materials and elements: stone, bricks, blocks, wood, steel  Masonry types and materials, function, mortars, and binding elements  Loadbearing, partition and sandwich walls  Chimneys and ventilation ducts  Modular design and structural grid: continuous and discontinuous grid and modular coordination.  Suspending floor slab structures: division, types, features  Pitched and Flat roofs: layers, design, and warm/cold roofs, green and inverted roofs.  EXERCISES:  For each topic is envisaged a practical exercise with graphical presentation. | | | |

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|  | **Mathematics** | | | |
|  | **Two (2) Semesters** | L+E h/w | L+E h/s | Total h |
|  | Semester I | 2+3 | 30+45 | 75 |
|  | Semester II | 2+2 | 30+30 | 90 |
|  | Semester I  **Real Numbers**. (Absolute value, Newton binominal formula)  **Complex Numbers** (Algebraic Form, Trigonometric Form, exponent and cube root)  **Matrices** (matrix - introduction, possible applications, types, multiplication and exponents, polynomial matrices)  **Determinants** (introduction, calculations, Properties characterizing the determinant)  **System of Linear Equations** (definition, Cramer's rule, Gaussian elimination, Matrix Equation Method)  **Vector Algebra** (definition, main applications, vector diffraction in components and projections on axis and space)  **Analytic geometry of space** (planar equation forms, angle between two planes, line equations in space, angle between two lines, line position and plane, spherical surface, elipsoid and hyperboloid, elliptical paraboloid and hyperboloid, paraboloid, cylindrical and conical spherical surfaces)  **Fibonacci numbers** (definitions, properties, the limits, Euler's number)  **Function** (definition, classifications, basic functions, restrictions and extensions, graphics, Boundary value and continuity of function. The infinitely small sizes and the infinitely large sizes etc) | | | |
|  | Semester II  **Differential calculus** (definition, geometric and cinematic definition, rules and tables, derivatives of basic elementary functions, tangent and normal line, higher derivatives, inflection point, Leibniz's notation, Lagrange's Rolle’s and Koch notation, undetermined forms, analyzing monotonicity of function and extreme values through the first derivatives test, Inflection points and function graph asymptotes, The general plan for reviewing the function and its graphical presentation)  **Integral calculus** (definitions and properties, Indefinite Integral Table, integration methods, inequalities of integrals, integrals of different forms, Definite Integral, relation between indefinite and definite integral, approximating an definite integral, Integral application in geometry etc)  **Differential equations** (definition, general and particular solution to differential equations, equations by separation of variables, homogenous equation, linear equation, Bernoulli’s equation, second order Differential equations, variation of parameters to solve differential equations) | | | |
|  | **Construction Materials** | | | |
|  | **One (1) Semester** | L+E h/w | L+E h/s | Total h |
|  | Semester II | 2+1 | 30+15 | 45 |
|  | Semester II  Importance and knowledge of construction materials  Examination of construction materials  Properties of construction materials  Physical Properties: Mass Volume, Specific Mass, Density, Porosity, Water absorption.  Heat and Sound Conductivity, Mechanical Properties, Technological Properties, Chemical Properties  Stone Construction material  Aggregate  Ceramic products (bricks, blocks, tiles  Binding materials, Types of mortars  Concrete  composition, basic requirements, mixing, properties, examination method, evaluation of the concrete class, casting, maintenance  Metals  Steel (processing, properties and examination, types of products  Non-ferrous (aluminum, copper, zinc, lead  Wood  physical and mechanical properties, defects, maintenance and protection, products  Thermal Insulating materials, vapor and moisture insulation materials. | | | |

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|  | **The Fundamentals of GND and CSD I** | | | |
|  | **Two (2) Semesters** | L+E h/w | L+E h/s | Total h |
|  | Semester I | 2+0 | 30+0 | 30 |
|  | Semester II | 2+0 | 30+0 | 30 |
|  | Basic Definitions of the General National Defence (GND) and Community Self Defence (CSD)  Organization of the General National defence (GND) and Community Self Defence (CSD)  Mobilization and development of forces and means. Civil Protection: General overview in the terms of prevention and rescue. World contemporary views on prevention and rescue. Organization of Civil Protection. Survey and Alarming System. Sources and forms of risk to society. Carriers and self-defence forces. Organization of a country for self-defence. The self-defence war. Passive general resistance. Continuation of social-work life and passive resistance in education, science and culture. | | | |
|  | **The Fundamentals Marxist Philosophy** |  |  |  |
|  | **Two (2) Semesters** | L+E h/w | L+E h/s | Total h |
|  | Semester I | 2+0 | 30+0 | 30 |
|  | Semester II | 2+0 | 30+0 | 30 |
|  | Semester I and II na | | | |

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|  | **Geometric Perspective** |  |  |  |
|  | **One (1) Semester** | L+E h/w | L+E h/s | Total h |
|  | Semester III | 2+3 | 30+45 | 75 |
|  | Semester III  Introduction  Importance of perspective and its role  Definition  Types of Perspective  Elements of perspective  Point of sight, object, sight rays, image plane; ground plane, horizon  Point, line and plane  Point figure, its first and second projection  Line figure, its intersection and vanishing point  Intersection and vanishing point of line with particular position  Intersection and vanishing point of line with arbitrary position  Design of perspective figures of geometric shapes  Plane infinity  Methods of compiling shapes in perspective  Determination of Point of sight, angle and picture plane  The method of sight rays intersection using vanishing points  Determination of scale points  Coordinate system method  Coordinate system method, introduction of new dropping plane The perspective of the circle  The frontal perspective-interior  Interior perspective, coordinate system method  Division of segment and square into equal parts  **Reflection in perspective figures**  Horizontal and vertical reflection in perspective figures  **Shadows in perspective figures**  Parallel lighting;  lighting rays parallel to the image plane;  Inclined lighting rays to the image plane;  Central lighting | | | |

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|  | **Hand Drawing II** | | | |
|  | **Two (2) Semesters** | L+E h/w | L+E h/s | Total h |
|  | Semester III | 1+2 | 15+30 | 45 |
|  | Semester IV | 1+2 | 15+30 | 45 |
|  | Semester III and IV  Lecturing and Exercises:  One-color toning (still nature)  Methodical explanation of Valeur of colours; Use of solid colours  Paintings techniques in:  gouache, aquarelle, tempera; Painting of human figure in the interior  Landscape study  Technique painting in: tempera or aquarelle; Perspective, relationships of architectural buildings with the human body. | | | |
|  | **The Fundamentals of Architectural Design II** | | | |
|  | **Two (2) Semesters** | L+E h/w | L+E h/s | Total h |
|  | Semester III | 2+3 | 30+45 | 75 |
|  | Semester IV | 2+3 | 30+45 | 75 |
|  | Semester III and IV  Housing and dwelling  Housing in a wide and narrow sense of the meaning; the function of the dwelling; planning of dwelling by functions  Groups of living room  Living room premises: day room, sizing, orientation, lighting and disposition  Functional groups in living room premises, correlation in between, disposition and arrangement.  Dining room: sizing, disposition and arrangement. Working areas: space, disposition and arrangement.  Sleeping units:  **T**he contents of the sleeping units, basic definitions for its function. Size and shape of a sleeping room.  The necessary furniture, their dimensions and layout, position within the dwelling.  Children sleeping room: additional functions and specific requirements. Safety in dwellings.  Toilets and wardrobes  Group of utilities and auxiliary spaces  Kitchen: equipment and layout, sizing and position in the dwelling. Orientation  Entrance: lobby, closet, wardrobe, sizing, furnishing, position in the dwelling.  **Circulation in residential buildings**  Horizontal circulation outside and inside the dwelling, function, sizing and disposition.  Vertical circulation: staircases, elevators, ramps, sizing, position and function.  Natural daylighting in architectural buildings  The importance of daylighting in work and dwelling premises and illumination.  Window. Historical development and sizing.  Basic terms in lighting.  The daylighting factors determining the level of lighting in premises  Urban and Architectural conditions.  Shading deep premises.  Lighting of particular purpose premises.  PRACTICAL WORK | | | |

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|  | **Architectural Structures II** | | | |
|  | **Two (2) Semesters** | L+E h/w | L+E h/s | Total h |
|  | Semester III | 2+3 | 30+45 | 75 |
|  | Semester IV | 2+3 | 30+45 | 75 |
|  | Semester III and IV  Vertical communication  Staircase’s types, design, structure, materials and design rules  Precast staircases  Wood and steel staircases, ramps, escalators and elevators  Roofs - timber structure roof  Types of roofs, roof elements and geometric roof solution  Simple roofs: Wood rafter framed structure roofs, Roof with post structure, common roofs on the reinforced concrete slab  Collar and purlin roof with ridge and under purlin beams; roof props: single, double and triple props; vertical and inclined props.  Trusses: king and queen post roof truss, fixing on reinforced concrete slab, wood floor framing, - hanging combination.  Mansard roofs, saw-tooth roof.  Tensile roof structures, towers, bent arches and roofs - the layouts, elements of complex roof structures.  Contemporary wooden structures.  C**raftworks:**  Roof covering works: covering with wood, with straw, with stone tiles; tiled, flat and corrugated tiles covering; glass and translucent covering material.  Sheet metal works  Wood works  Wooden frame windows: single, double leaf framed windows etc.; window specification, sliding windows, joinery metal fittings, wood shutters and louvers  Doors of carpentry, panels, sliding doors etc.  EXERCISES:  For each topic is envisaged a practical exercise with graphical presentation. | | | |

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|  | **History of Architecture I** | | | |
|  | **Two (2) Semesters** | L+E h/w | L+E h/s | Total h |
|  | Semester III | 2+3 | 30+45 | 75 |
|  | Semester IV | 2+3 | 30+45 | 75 |
|  | Semester III  **Ancient History of Architecture**  Introduction  Elements of the architectural work, the architectural expression language, the principles of architectural composition, tectonics and stereotomy, the understanding of architectural style, the review of architectural styles  The beginnings of architectural creativity in Neolithic , megalithic monuments  History architecture in Mesopotamia  History of architecture in Egypt  History of architecture in Persia  History of architecture in the Aegean, Crete, Mycenaean, Asia minor.  History of architecture in Greece  History of Etruscan and Roman architecture  Each chapter includes social, economic and other circumstances of birth and development of architecture, division of artistic eras, bilateral influence of architecture, architectural composition characteristics, types and analysis of architectural monuments  EXERCISES:  A combined task from stylistic classical orders, Latin letters and sketches of architectural monuments and their details - pencil, colour, and ink or colour pen. The purpose of the exercises is to develop proportional sensitivity, visual memory and skill in drawing | | | |
|  | Semester IV  **Medieval History of Architectural**  Introduction  Transition from antiquity to medieval times, social circumstances and history of medieval architecture, typological and stylistic divisions  Post Antiquity Architecture, Early Christian Architecture in Mesopotamia, Syria, Egypt, Asia Minor, North Africa, Armenia, and Georgia.  Byzantine Architecture  Islamic architecture  Protoromanic architecture in Western Europe  Romanesque architecture in Europe  Gothic architecture in Europe  Building heritage  Introduction, conduct of harmonization, types, values, risks and devastating causes, protection of building heritage and its history and periodization of historical background  EXERCISES:  A task that deals with the solution of the spatial characteristics of medieval architectural building – thick paper, ink and the appearance of coloured shades. | | | |

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|  | **Mechanics** | | | |
|  | **One (1) Semester** | L+E h/w | L+E h/s | Total h |
|  | Semester III | 2+2 | 30+30 | 60 |
|  | Semester III  Definitions, axioms and junktions  Definitions of general notions; Static axioms; Junctions and axioms on Junctions.  System of competitive forces  Graphical and analytical presentation of force; Composition of competitive forces. Resolution of force into components; The system equilibrium of the competitive forces; Three-Force Theorem; Static determined and undetermined tasks. Resolution of static tasks.  Systems of coplanar forces  Definition; The Net Force of coplanar system forces. The static momentum of force at a point; Theorem on the moment of the Net Force; Pair of Forces and Momentum of pair of forces. Reduction of system forces at one point; The equilibrium of the arbitrary system forces on the plane.  Elements of graphic statics  Understanding the forces polygons and cables polygon; Determining the arbitrary coplanar net system forces; Equilibrium graphic conditions; Resolution of force in three directions; Determining of force reaction on junction.  Equilibrium of the solid body on the plane  Degrees of Freedom of the Solid Body and its support links; Braces and their types; Brackets and their types; Load types, Linear bearings, Determining of force reaction on junction  Equilibrium of solid bodies system in the plane  Degrees of Freedom of the Solid Bodies System; Reactions of junctions of bodies system. Equilibrium of kinetic systems.  **The elements of theory of trusses**  General notions; Methods of assigning force to the truss braces; Complex trusses.  System of arbitrary forces on space  Force momentum on point as vector; Force momentum on axis; The momentum vector of pair forces and its theorem; Composition of the pairs system; Reduction of the system forces; The equilibrium of system forces; Degrees of Freedom of the Solid Body and its support links; determination of reactions in the body's joints; Stability of equilibrium position; stability from overturning  Centre of Gravity  Centre of parallel forces in space; The Centre of Gravity of the body, shape and material line; The methods determining the Centre of Gravity | | | |

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|  | **The Resistance of Materials** | | | |
|  | **One (1) Semester** | L+E h/w | L+E h/s | Total h |
|  | Semester IV | 2+2 | 30+30 | 60 |
|  | Semester IV  Strengthening and cutting forces  The main meanings and assumptions in Material Resistance, type of Force, Cutting Methods, Meaning of strains, and Relationship between Load Intensity, Transverse Force, and Bending Momentum.  Axial stress  General notions, constrains and deformations in the case of axial stress Hooke’s and Poisson's law, some mechanical properties of materials, thermal stress, statically undetermined system, and sizing.  Some geometric features of plane shapes  The static momentum of the surface, the momentum of inertia, the momentum of inertia to parallel axes, the main momentum of inertia, momentum of inertia of complex figures.  Deflection  General understanding, constrains in the case of pure bending, constrain stresses in the case of transverse force bending, beam deformation due to bending, Mohr's method determining the deflection and rotation angle, statically undetermined tasks.  Complex Stress  Tensile and compression eccentric stress, inclined bending.  Column Buckling  Euler's formula for critical constrain forces, Euler's formula application boundaries and empirical formulas.  Sizing different stress momentums  Sizing in the case of axial stress, sizing in the case of deflection, sizing in case of eccentric tensile and compression stress and sizing in the case of buckling.  EXERCISES:  Exercises in groups of round 20 students where are applied formulas solving practical numeric problems, students are instructed on task solving issues and interactively take place on task solving issues; each student will conduct two numerical practical task compiling: static diagrams for a frame or complex beam, main inertia momentum for a plane figure. | | | |

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|  | **Geodesy** | | | |
|  | **One (1) Semester** | L+E h/w | L+E h/s | Total h |
|  | Semester IV | 2+1 | 30+15 | 45 |
|  | Semester IV  Introduction  The shape and dimensions of the earth  Cartographic projections  Earth Coordinate System  The notion of size and measurement  State triangulation (triangulation)  Measuring the lengths with the tools  Instrument for the measurement of angles-theodolite  Tools for building a right angle on the ground  Surveying (recording) the terrain  Levelling; Geodesic plans and maps  Drafting of plans and their graphic accuracy  Scaling of topographic plans  Engineering Geodesy  Introduction  Graphic assignment of coordinates of the points projected in the geodetic plan.  Marking the project on the ground  Targeting of a projected object facility  Project mapping of the urban plan  Photogrammetry  Introduction  Earth photogrammetry (terrestrial)  Shooting the building  Photogrammetry of a photograph  The accuracy of the topographic layout obtained with photogrammetry  Application of photogrammetry in architecture  EXERCISES:  Compiling an geodesic elaborate | | | |
|  | **Sociology** | | | |
|  | **Two (2) Semesters** | L+E h/w | L+E h/s | Total h |
|  | Semester III | 2+0 | 30+0 | 30 |
|  | Semester IV | 2+0 | 30+0 | 30 |
|  | Semester III and IV  Sociology  The ratio of sociology and other social sciences; specific sociologies;  Methods in sociology; Categories and sociological issues; Human society and its various interpretations;  The social phenomenon types and the relationship of social and individual phenomenon; Social groups and their types; ethnic groups and interethnic tolerance; The social character of the marriage, family, and their historical features; Divorce and its consequences; women and society; Social stratification and different views on it; classes, social strata and occupations; Social awareness and its forms;  Political parties and their origins; plurality  Group and individual interactions and interaction of social groups; forms of interactions; interaction of individuals and social groups;  **Urbanization and its social reflexes**  Automation and its social reflections;  Sociology of industry  Organization of production and transformation of the work; education and professional development;  Enterprise psycho-sociology; Ethics and social system of the enterprise;  Individual and professional motivations; wages and motivations; working group and productivity; leadership with the working group.  Social psychology of organization, venture communication and distribution of responsibility in decision making;  Sociology of unionism and labor conflicts (strike). | | | |

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|  | **The Fundamentals of GND and CSD II** |  | |  |  |
|  | **Two (2) Semesters** | L+E h/w | | L+E h/s | Total h |
|  | Semester III | 2+0 | | 30+0 | 30 |
|  | Semester IV | 2+0 | | 30+0 | 30 |
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|  | **Design of Housing Buildings** | | | | |
|  | **Three (3) Semesters** | | L+E h/w | L+E h/s | h/s |
|  | Semester V | | 3+4 | 45+60 | 105 |
|  | Semester VI | | 2+3 | 30+45 | 75 |
|  | Semester VIII | | 1+4 | 15+60 | 75 |
|  | Semester V  **Housing issues**.  Historical view of collective housing  Typology of individual family buildings  Detached Housing; Semidetached Housing; Terraced Housing; L shaped Housing with courtyard, Villas  **Multi dwelling residential buildings**  The typology of multi-dwelling residential building in the dwelling - mobility relationship  Housing building in sections; Housing building with central corridor; Housing building with gallery;  High-rise housing buildings; The housing building in cascade - steep terraces  The building with two or more floors (duplex, triplex)  Arrangement of dwelling areas  Dwelling classification on layout composition  The elements of influence in the dwelling layout composition multi-dwelling buildings  Characteristic dwelling areas; Perception of dwelling layout composition  Social life in dwellings; Children distribution by gender.  Adaptability (flexibility) of dwellings  Recreation areas and facilities  Technical conditions and design norms for multi-residential buildings and dwellings  Disables physical barriers in multi-residential buildings and dwellings  Waste discharge from dwellings and buildings  Structural components in the design of multi-residential buildings and single family housing  Architectural shaping and building materials  EXERCISES:  Detached House G; Detached House G + I, Semidetached house,  Terraced house, L shaped house, House with atrium;  Single family housing block with urban design;  Residential housing block with sections; Housing block with central corridor - gallery;  High-rise buildings, buildings with two or more floors; Buildings in the cascade | | | | |
|  | Semester VI  Provisional residence  Hotels  City hotels; Transit hotels; Hotels for recreation; Seasonal hotels; Resort Hotels; Recovery Hotels.  Touristic resort compounds.  EXERCISES:  5 star Hotel | | | | |
|  | Semester VII  Motels; suits; Camps.  Dormitory- houses. Student dormitories;  Primary school students’ dormitory; High school students’ dormitory;  House for the elderly; Homes for orphans; Homes for children with disabilities;  Mountain homes;  Combined Preschool Institutions;  Clubs; Moving facilities; ships; airplanes; Sleeping wagons;  EXERCISES:  Motel; Preschool Institutions; Student Dormitory; House for the elderly | | | | |

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|  | **Design of Public Buildings** | | | |
|  | **Four (4) Semesters** | L+E h/w | L+E h/s | Total h |
|  | Semester VI | 2+3 | 30+45 | 75 |
|  | Semester VII | 2+3 | 30+45 | 75 |
|  | Semester VIII | 2+4 | 30+60 | 90 |
|  | Semester IX | 2+4 | 30+60 | 90 |
|  | Semester VI  **Commercial and administrative buildings**  Introduction and development  Working place, development and composition of spatial systems, room characteristics by number of working places  Types of commercial buildings  Open space buildings (working premises and auxiliary premises, cell development in open systems)  Buildings with meeting rooms (meeting room composition, communal buildings  and municipal departments)  Buildings with counters' halls (teller services, post and bank offices, basic organizing principles)  Aspects of architectural shaping of development trends  School Buildings  Introduction - development, status and goals of social and institutional education (planning, location and school role in settlements)  Location of the school building, content and landscaping.  School development and school buildings development (content, from basic to complex structural characteristic)  Educational and social content of contemporary schools.  Architectural interpretation of contemporary principles in education, the educational process and didactics in the concepts of professional schools.  Open-space areas contents of physical and social education in schools.  Spatial and structural systems.  Secondary education - architectural aspects of integration of subjects  Aspects of architectural forms in the design of school buildings  EXERCISES:  During the 6th semester, students shall conduct conceptual design of public buildings among commercial, municipal community buildings, bank and post offices. In addition shall conduct particular groups of educational buildings. | | | |
|  | Semester VII  Facilities for physical culture, recreation and sports  Introduction  Review of the development of physical education and sport from antiquity to the present  Facilities and sports culture:  Open facilities (planning, pitches, auxiliary premises, athletic stadiums, football and other sports).  The elements of the stadium  Centers for physical education and sports  Sport halls for physical sport activities and sports manifestations (development, types and their division in gyms for general service and halls for sports and manifestations).  Spas and pools  Development of spas from the antique terms to the spas sports pools, planning and regulations. ·  Open spas (spas with natural waters springs, spas with open-air swimming pools).  Indoor pools, combined pools and pools for any weather condition.  EXERCISES:  During the 7th semester students shall conduct the conceptual design of school building (primary, secondary) with elements of main design. | | | |
|  | Semester VIII  Healthcare buildings  Introduction, review on the development of health care and medicine, planning and building of health facilities networks.  Types and division by destination  Primary healthcare buildings outside of hospitals  Diagnostic services, therapeutic premises, intervention and animation premises  Hospitals (development, division and planning)  General hospitals, specialistic hospitals  Characteristics of the development of the structure and provision of the basic contents of the hospitals  Functional groups of hospitals:  Stationary premises, other premises emergency unit, reception unit, diagnostics, Surgery units, birth giving unit, endoscopy, physiatrist, pathologic anatomical premises, autopsy unit, and chapel. Hygienic services and supply services  Energy services, traffic, security measures and ensuring permanent funktionality.  Concepts of architectural, functional spatial forms.  EXERCISES:  During the 8th semester students shall conduct the conceptual design of sport facility (stadium, sport hall, open-air or indoor pools). | | | |
|  | Semester IX  Theatres  Introduction, review of theatre development, auditorium, shapes, sizing, principle of visuals and acoustics: scenes, public premises, performers’ premises, contemporary concepts of the auditorium for contemporary performances.  Cultural and Social Centres  Introduction (reflections on the development of cultural centres, planning, content, spatial structures of spatial structures of social centres, social cultural centres and development trends in the context of democratization of society in general.  Libraries  Introduction, reflections on its role in social cultural life, type of libraries, planning of library network by destination, organization of characteristic content of closed and public libraries, specific organization of premises of some types of libraries: district libraries, municipal, regional, national and university libraries).  Museums  Development overview, planning and types of objects, contents of the museum building, architectural principles of the spaces in terms of museum principles, types of objects according to their destination etc.  EXERCISES:  During the 9th semester students shall conduct the conceptual design of health care building or cultural building. | | | |

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|  | **Architectural Structures III** | | | |
|  | **Two (2) Semesters** | L+E h/w | L+E h/s | Total h |
|  | Semester V | 2+2 | 30+30 | 60 |
|  | Semester VI | 1+2 | 15+30 | 45 |
|  | Semester V  General notions of Building Physics  Physical laws during the process of heat exchange; Heat conductivity through materials; Heat transfer; Heat exchange by radiation; Heat transfer over building elements; Homogeneous construction elements; Composite construction elements; Heat conductivity - the heat conductivity coefficient of construction materials and structural elements; Heat impact; Moisture impact; Heat transfer coefficient; Coefficient of heat radiation; Thermal protection through air strata; Calculation of thermal protection; thermal insulation and heat transfer through building elements; Heat transfer resistance; U – Value; Heat accumulation; Heating and Cooling; Exterior temperature oscilations; Heat losses; Thermal insulation of the building envelope; Moisture protection; Dew in building materials; Water vapour through structural elements and internal condensation; Calculation of water vapour in structural elements; Calculation of moisture; Minimum thermal insulation avoiding of dew formation; Thermal bridges in building structure; Slope roofs; Flat roofs; Cool / warm roofs insulation;  EXERCISES:  Individual exercises conduction calculation of thermal insulation, analysing and computing the amount of condensate in the external building elements such as walls, flat roofs, pitch roofs, floors above external areas, floors on ground, walls on ground etc. | | | |
|  | Semester VI  Noise Insulation  General occurrences, Sound level, sound pitch, frequency; Airborne and mechanical noise; Minimum Requirements for noise Protection of buildings; Structural elements due to noise insulation; Noise insulation in multi-storey Residential dwellings, attached dwellings and other buildings  Airborne Insulation Definitions;  Homogenous structural elements; Mass and voids Impact in noise insulation;  Composite structural elements  Airborne noise through air layer; Airborne noise through the layers; Partition walls; Homogenous partition walls; Composite partition walls; Composite partition walls between two dwellings; Ceiling protection from airborne noise impact; Homogenous ceilings; Composite ceilings; Improvement of sound insulation through floors; Doors and windows; Openings and ventilation; Noise insulation from mechanical impact; Ceilings; Floating floor; Solid ceilings; Wood Floors; Floor layers; Calculation of Noise insulation from mechanical impact; Noise insulation from other dwellings; Noise insulation of movable walls partition walls; Noise from installations; Traffic Noise insulation; Noise insulation from absorbing materials;  Acoustics in Architectural  General notions; Human ear acoustic properties; Sound analysis; Acoustic properties of materials and absorbent structures; Porous Absorber; Membrane absorbers; Resonator Absorbents; Spatial acoustics; Volume, shape, echo, reverberation and calculation of reverberation time; Hall acoustics; Acoustics of music halls; Classroom acoustics; Lecturing premises; Concert Hall; theatres; Some acoustic issues for halls.  EXERCISES:  The elaborate dealing with thermal and acoustic insulation calculation issues on multi dwelling housing building, including floor and section layouts in scale of 1:50 with appropriate details of 1:10 drawing scale containing thermal improvements and noise reduction. | | | |

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|  | **The History of Architecture II** | | | |
|  | **Two (2) Semesters** | L+E h/w | L+E h/s | Total h |
|  | Semester V | 3+0 | 45+0 | 45 |
|  | Semester VI | 2+0 | 30+0 | 30 |
|  | Semester V  The history of the architecture in the new era  Concept of renaissance in architecture, in space as society Architectural expression language, elements and relationship  Quattrocento’s architects and their works.  Italian and French renaissance in xvi century; Architects and their works  Mannerisms, Michelangelo, Palladio  Baroque architecture, Maderno, Bernini, Borromini, Guarini, Longena, Mansari  Rococo in architecture and direction in eclecticism of the XIX century  The theory and practice of XVIII century rationalists Laugier, Lodoli, Ledoux  New materials, programs and orientations in the XIX century  Eclecticism of the XIX century  The architecture of world exhibitions experimental fields  Movements on the eve of XX century, preparatory stage in architecture  Semester VI  Contemporary Architecture  Introductory analysis in contemporary architecture. Style 1900  Jugendstil, Secession, Glasgow School, Art Nouveau  Chicago School and the development of the theory of functionalism, Luis Sullivan and his works.  Organic architecture. Frank Lloyd Right  Application of reinforced concrete in contemporary architecture.  Bauhaus and Walter Gropius  Miss Van Der Rohe; Works and its impact on the contemporary architecture  Le Courbusier, Works and its influence on contemporary architecture and urbanism. The Athens Charter (fr. Charte d'Athènes )  Alvar Aalto; Synthesis of regionalism and modernity in Architecture  Russian constructivism, contribution, and permanent professional values  Japanese architecture, tradition and contemporary in the example of Kenzō Tange, the metabolism and the newest research of Japanese young architects.  The modern architecture crisis of the 1960s, Venturi's theory and the researches and theories of Aldo Rossi  New architects and their ideas: Stirling, Kurokawa, Isozaki, Krier brothers, Graves etc. | | | |
|  | **History of Art** | | | |
|  | **Two (2) Semesters** | L+E h/w | L+E h/s | Total h |
|  | Semester V | 2+0 | 30+0 | 30 |
|  | Semester VI | 2+0 | 30+0 | 30 |
|  | Semester V and VI  Each chapter includes the economic, social, ideological, cultural, other technicalities of artistic creativity, the appearance of epochs and directions in particular, artists and works of art.  Prehistoric Art  Egypt, Mesopotamia, Persia, Aegean, Greece, Etruria and Rome  Medieval Art, Byzantium, Islam  Romanesque, Romanic and Gothic art  The Early, Great Renaissance and Renaissance In Western Europe  Baroque, Classicism and Romance  Realism and Impressionism  Contemporary Art, Architecture, Sculptures and Paintings. Expressionism, Fauvism, Regionalism, Futurism, Abstractionism  Suprematism, Constructivism, Dadaism, Purism, Neo-Renaissance Neoplasticism and "De Stil"  Socialist Realism, Neohumanism, Naive Art, Pop Art, Optical Art, New Realism, new trends, Structuralism  Kosovar art in the twentieth century: XX | | | |

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|  | **The Fundamentals of Urban Design** | | | |
|  | **One (1) Semester** | L+E h/w | L+E h/s | Total h |
|  | Semester VI | 2+3 | 30+45 | 75 |
|  | Semester VI  **Housing Block**  Historical overview of the Housing Block development  Housing Block creation  Content of Housing Block  Sizing and types of Housing Block  Housing Area  Structure of the housing area  The size of the territory of the housing area  Determination Criteria of housing territory  Topography Analysis of housing area  Insolation  Auxiliary facilities in the housing area  Roads As Urban Elements  General traffic characteristics  Road profiles  Street’s and squares’ elements  Traffic flows  Roads in dynamic terrain  Arcades, passages, colonnades, fences  EXERCISES:  Design of urban elements  The conceptual design of the urban housing block on flat terrain | | | |

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|  | **The Statics of Architectural Structures** | | | |
|  | **Two (2) Semesters** | L+E h/w | L+E h/s | Total h |
|  | Semester V | 2+3 | 30+45 | 75 |
|  | Semester VI | 2+3 | 30+45 | 75 |
|  | Semester V and VI  Statically determined Systems  Determination of cutting forces mtn to Statically determined Systems  Structural Analysis Methods  Classification of structures  Loads  Fundamental Principles  Terms of compatibility  Kinematic structure analysis  Geometrically variably systems  The arch with three hinges  Langer bearings  Impactive lines  Determining the most disadvantaged location of kinetic load Statically determined trusses  The basics of the kinematic mechanism  Kinematic impactive method  Displacement determination by unit force method  Principle of Virtual Force Principles for Calculation of Structural Deformations  Numerical principles for calculating generalized displacements  Impactive lines for displacement  Displacement diagrams  Statically undetermined Systems  Statically determined and undetermined Structural Systems  Comparison  Methods of calculating Statically determined and undetermined Systems – force method  Base system and excessive sizes  Construction of elastic equations  Control of statically undetermined diagrams  The rational solution of the base system  Simplifying of base system selection by forces method  Elastic deformations of Statically undetermined Systems  Impactive lines for Statically undetermined Systems - deformation methods  Kinematic Determination Rate  Relationship between deformations and static dimensions of basic system elements  Relationships between deformations and static sizes in basic system elements  Designing canonical equations with the deformation method  Determining the system stiffness matrix by means of the element stiffness matrices  Exploitation of system code to form the system stiffness matrix by means of the element stiffness matrices  EXERCISES:  Numerical tasks. | | | |

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|  | **Wooden Structures** | | | |
|  | **One (1) Semester** | L+E h/w | L+E h/s | Total h |
|  | Semester VI | 2+1 | 30+15 | 45 |
|  | Semester VI  Introduction to wooden structures.  Basics of calculations; definitions and classifications, calculation theories - linear theory, boundary condition. Short load analysis, load grouping.  Material properties; the parameters of hardness and stiffness, the characteristic values and the relationship between the stresses and deformations, the rheological calculation patterns; wood classification, wood types.  Monolithic wood  **S**orting, permissible stresses, characteristic strength values, volume, cross-sectional dimensions.  The stability of wood structural elements according to permissible stresses; compression, tensile, bending and shear stresses. The theory of boundary condition use; partial safety coefficients for materials and loads, displacement of joints, boundary limit values. The theory of boundary bearing condition; tensile compression, bending, shear and torsion.  Binding means  Bolts, thorns, nails, gusset plates, hinges and adhesives.  Connections and extensions of timber structures; the extension of compression and tension stressed bracings, the connection of the bars under the right angle, connection of compressed and tensile inclined bracings.  Roofs  Roof structure in general, general treatment. Laminated wood structures. Technological production process, structural features, types of cross sections, glued lamination beam.  Bracket sizing and designing; straight with constant height, inclined with constant height, and arc shaped. Connections and extensions to the laminated structures; Bonding with look like hinges, modular bracket extension, Gerber hinges, the rigid links between the ridge and post. Spatial Stability of wood structure. Additional structural reinforcement from horizontal impacts in two orthogonal directions. Supply of bracket with greater height than its buckling. Side and gable reinforcements.  EXERCISES:  Papers with numeric examples and a building disposition layout. Each numeric task for each student, shall be of same topics with different input data. | | | |
|  | **Installations Water supply, Electric, Mechanical** | | | |
|  | **Water supply and waste water installations** | | | |
|  | **One (1) Semester** | L+E h/w | L+E h/s | Total h |
|  | Semester V | 1+1 | 15+15 | 30 |
|  | Semester V  Introduction:  Water, water demands, quality, quantity  Resources, groundwater, surface and storm water; Filtration of drinking water  Water elevating, buster pumps, reservoirs; Hydraulic calculation of the water supply network; Internal water supply network fittings and sanitary fixtures;  Water supply diagrams and works; Network testing  Water supply – firefighting network  Wastewater, type and content.  Sanitary fixtures, floor drains, sanitary premises  Piping, type, material  Hydraulic calculation of sewerage network.  Household sewage axonometric drawings schemes, connection to city public network; Drainage and drains in buildings; Works on the sewerage network;  Testing of the sewerage network, maintenance, waste water discharge  EXERCISES:  On the dwelling layout or similar, schematically develop the conceptual piping network, of water supply and waste water network pipe sizing with sanitary fixtures. | | | |

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|  | **Electric Installations** | | | |
|  | **One (1) Semester** | L+E h/w | L+E h/s | Total h |
|  | Semester V | 2+1 | 30+15 | 45 |
|  | Semester V  Fundamental knowledge of the physical light properties and colors. Photometric units. Light sources. Incandescent bulbs. Halogen bulbs. Fluorescent bulbs. Mercury lamps. Sodium lamps. Chandelier. Lighting of interior premises. External public lighting.  Definition and division of electrical installations. Power Consumption appliances. Design of electrical installations. Basic components of electrical installations. Selection, installation and connection of components in electrical installations. Calculation of electric intensity and drop voltage. Connection of the building into the public distribution network. Earthing in electrical installations. Protection against electric shock. Protection against direct and indirect contact. Protection of the building on the ground from atmospheric discharges. Lightning protection installation.  EXERCISES:  On the dwelling layout or similar, schematically develop the conceptual electric cabling network of electric, photometric calcualtions and lighting fixtures | | | |
|  | **Mechanical installations** | | | |
|  | **One (1) Semester** | L+E h/w | L+E h/s | Total h |
|  | Semester V | 1+1 | 15+15 | 30 |
|  | Semester V  General part.  Heating and thermal comfort. Temperature and metering units. Exterior design temperature.  Heat losses  Heat transfer coefficient; data for calculation of the heat demand, room temperature of not heated premises; infiltration heat losses; overall heat demand; introduction measures during the building design. Annual consumption of heating energy.  Heating system equipment  Local heating, central heating systems.  Heating appliances  Radiators. Tubular heaters. Panel heating fixtures. Plate heaters. Heaters with forced air circulation.  Central heating systems  Heating with warm water. Steam heating. Heating with warm air. Radiation heating.  Piping network  Heating with gravitation. Heating with pump operation.  Ventilation  Wet air. Elements of air pollution. Natural ventilation. Ventilation. Mechanical ventilation.  Basic equipment of ventilation and air conditioning systems  Fans. Air purification. Air heating. Cooling the air. Moisture and drying of air.  EXERCISES:  On the dwelling layout, schematically develop the conceptual heating network, and sizing of heating fixture, heating demand, heat losses, etc. | | | |
|  | **Programming** | 1 | 30+30 |  |
|  | **One (1) Semester** | L+E h/w | L+E h/s | Total h |
|  | Semester V | 2+2 | 30+30 | 60 |
|  | Semester V  Problem solving with computer  Programming languages; Numerical systems  Data Types; Algorithms  Fortran programming language; Fortran forms  Reading and writing commands; Logical and rational expressions  Sub programs; Work with the external memory  Opening and closing data files  STOP, END, IF, GO TO, DO, CONTINUE, EXTERNAL, INSTRINCIC and DATA commands  EXERCISES:  Solving the tasks as following the topics during the lectures. | | | |
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|  | **Design of Industrial Buildings** | | | |
|  | **Three (3) Semesters** | L+E h/w | L+E h/s | Total h |
|  | Semester VII | 2+3 | 30+45 | 75 |
|  | Semester VIII | 2+3 | 30+45 | 75 |
|  | Semester IX | 2+4 | 30+60 | 90 |
|  | Semester VII  Introduction  Development and economic activity in contemporary conditions as well as their structure that gives overall technological result. Functional elements and research methods in the future as well as the role of Architecture and Architect during research. The architectural education issues in the rapid social, technological and scientific development in general.  Public parking and garaging  Open parking; Garage facilities; The importance of these facilities in the modern structure of the city; Mechanical garages; Garage with ramps; Elements of Garage parking; Construction and Architecture of Garage Facilities  EXERCISES:  During 7th semester will be carried out a methodical exercise, afterwards will be conducted a conceptual design with elements of the main design for Garage Building. | | | |
|  | Semester VIII  Introduction  Storehouse  Grain Warehouses; Storage of rough products; Silage storage facility;  Storage of disposable materials (manure, juice, etc.)  Stalls  Cattle stalls, Tie Stall Sheds, Free Stall Sheds, Milking system and their types;  Maternity stalls; Stall for young cattle; Principles Compounds and examples  Pig stalls; Poultry stalls  Lighting  Industrial Building  Characteristic types and structural elements in industrial facilities; Architectural and structural characteristics of concrete structures; Industrial buildings in storeys and their structural features; Equipment and processing of working spaces; Buildings and premises in the Industrial Compound; Garages and firefighters; Energy facilities; Daily lighting calculations  EXERCISES:  During 8th semester each student will compile a conceptual design of a particular agricultural facility. | | | |
|  | Semester IX  Commercial Premises  Shopping malls  Shopping centre  Stationary public transport facilities  Airport Terminals  Railway Stations  Bus Stations  Combined Stations  Industrial facilities  Introduction and historical overview of the construction of industrial buildings  Criteria for selecting the location for industrial complexes  Industrial areas  Industrial compounds  Analysis of technological requirements  Organizing of the traffic in industrial complexes and production halls  EXERCISES:  During 9th semester each student will compile a design of a particular commercial and industrial facility | | | |

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|  | **Urban Design 1** | | | | |
| U | **Two (2) Semesters** | L+E h/w | L+E h/s | Total h |
|  | Semester VII | 3+3 | 45+45 | 90 |
|  | Semester VIII | 2+4 | 30+60 | 90 |
|  | Semester VII  The purpose of the subject - knowledge of the typology of settlements, the understanding of the local community, the principles of local community design, introduction of the fundamental urbanistic category, population as a factor in urban design, human needs, zooning orientation and functional areas as well as urban planning concepts and spatial planning.  Typology of settlements  Local community  Fundamental urban categorization  Population as a factor in urban design  Human needs  Valuable orientations  Functional zoning and functional urban areas  Housing  Urban planning and spatial planning  EXERCISES:  Design of the local community for 5,000 people | | | | |
|  | Semester VIII  Objective – introduction of industrial zoning, warehouse and service areas, urban centres, sports and recreation areas, mobility and urban elements.  Urban design of industrial areas warehouse and service areas  Urban social centres  Squares  Parks  The sport and recreation area of traffic  Underground Urbanism  Urban elements  EXERCISES:  Design of the regional social centre for 50,000 Residents | | | | |

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|  | **Concrete Structures** | | | | |
|  | **Two (2) Semesters** | L+E h/w | L+E h/s | Total h |
|  | Semester VII | 2+3 | 30+45 | 75 |
|  | Semester VIII | 2+3 | 30+45 | 75 |
|  | Semester VII and VIII  The reinforced concrete attributes  Background of the development of reinforced concrete  Fields of use of reinforced concrete  Advantages and disadvantages of reinforced concrete  Physical and mechanical properties of concrete  Reinforcement  Methods of calculation of reinforced concrete  Permissible stress design method  Sizing method of bending structures  Structural stress control  Boundary condition design method  Sizing of bending elements with rectangular cross section and T-shaped section  Sizing of elements that work in axial compressive stress and axial compressive stress without buckling  Sizing of the elements that work on axial compressive stress reinforced with longitudinal rebar, stirrups and elements reinforced with spiral reinforcement  Sizing of the elements that work axial tensile stress  Sizing of elements working in eccentric compression- the case of minor eccentricity and the case of major eccentricity  Sizing the elements that work in eccentric tensile stress – the case of minor eccentricity and the case of major eccentricity  Sizing the elements that works on shear stress (tangential)  Sizing of elements that work in torsion and bending with torsion  Designing, sizing and reinforcement of structural elements  Formwork and Positioning  Slabs and cantilever beam  Simple beam, Continuous Beam, Anchored beam, Two way reinforced slab,  Staircases, Slab with concrete joist system: monolithic and semi precast joists  Foundations, Isolated footing, Strip footing, Raft foundation,  Flat slab, Waffle slab  EXERCISES:  Numerical tasks shall be performed for each topic.  Graphical presentation of the calculations, design sizing and reinforcement of cantilever beam, simple beam, staircases, a building with two way slab reinforcement, continuous beam, columns and foundations. | | | | |

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|  | **Metal Structures** | | | |
|  | **One (1) Semester** | L+E h/w | L+E h/s | Total h |
|  | Semester VII | 2+1 | 30+15 | 45 |
|  | Semester VII  Introduction.  The field of use of metal structure and their main characteristics.  Fundamentals of sizing and designing of Metal Structures.  Degree of safety, Permissible stress design method.  Boundary condition design method  Steel production assortments.  Tools for joining and fittings elements in metal structures.  Tools for forging and welding  **Designing and making of extensions**  Partial and universal extensions.  Possible positions of two beams connected an angle.  Designing and making of rod joints on truss nodes.  Centring the poles  Tube (pipe) trusses.  Designing and making of structural rods  Compression stresses rods  Designing and making structural beams  Construction of lamina beams  Welded beams, shapes and ways of construction  Sizing of beam cross section.  Introduction. Types of metal structure buildings, the construction methodology in general.  Building covering, types of coverings.  Braces, sizing and design  Main girders  Main linear spatial girder, three dimensional trusses, suspended roofs Distribution of main girders  Joints in metal structure buildings  **Metal poles**  The connection of the pole with truss shaped girder  Bearings in general  Surface bearings, tangential bearings, Spherical and cylindrical bearings  Building envelope structure  Enclosing massive brick wall, corrugated sheets, autoclaved masonry  Sorting of vertical longitudinal joints and movement joints.  Bridge crane runway  Mobile cranes, cantilever and revolving cranes, under girders beam  EXERCISES:  It is foreseen a task to: Compile a deposition of industrial hall facility. The elaborate on industrial hall shall contain: Technical Specification and considered solution variants with detailed description and final rationale of the adopted variant. Design disposition on appropriate scaling with general details of beam and pole, pole and foundation. | | | |

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|  | **Spatial Structures** | | | |
|  | **One (1) Semester** | L+E h/w | L+E h/s | Total h |
|  | Semester VIII | 2+1 | 30+15 | 45 |
|  | Semester VIII  Structural Systems:  General notation ; Classification of structural systems: Classification by load transmission, Classification by geometric form, Classification by storeys.  Plain load bearing structure:  History; Beam shaped structure; Frame shaped structures; Arc shape structures; Combined shape structures.  Spatial Load bearing structures  Shells  General notation; Types of shell structures; Revolving shells;  Surface of Translation:  Cylindrical shells: Longitudinal Cylindrical shells, short Cylindrical shells  Conoidal shells  Double arched shells: revolved Paraboloid; elliptical paraboloid; Hyperboloid; Hyperbolic paraboloids; Shells in the form of domes; Wavy domes.  Calculation of internal forces:  Hypothesis and shell calculations; Cutting Forces and momentum; The internal forces in the revolving shell according to the theory of no momentum.  Folded structures:  Operating of folding structures; Static function of elements; parallel folding structures; non parallel folding structures; structures with intersection folded plates.  Suspended structures:  One directional curved suspended structures; Bi directional curved suspended structures; Combined rope and rod structures;  Tents  Structural details of suspended coverings.  Spatial frame structures:  Basic elements of spatial trusses; Planar Flat Structures; Curved structures; Making of bearing joints.  Completion of coverings on spatial structures  Covering  Thermal Insulation; Storm water discharge; Expansion joints; Lighting; Monolithic concrete casting: Formwork, reinforcement and casting concrete.  EXERCISES:  Seminar Paper on spatial structures | | | |

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|  | **Foundation Structures** | | | |
|  | **One (1) Semester** | L+E h/w | L+E h/s | Total h |
|  | Semester VIII | 2+0 | 30+0 | 30 |
|  | Semester VIII  Engineering classification of soils.  Research work  Physical-mechanical properties of soils (specific weight, volume, water content, granularity, plasticity limits and porosity).  Water is soil  Soil resistance on sliding.  Soil settlement, soil consolidation, Pore water pressure and time flow settling.  Strain distribution on soil and its evaluation.  Soil bearing capacity on the basis of laboratory and in site findings "in situ"  Soil pressure on the retaining walls  Loads which acts on the foundations, basic foundation design requirements, determination of the foundation depth  Shallow foundations.  Foundations protected by lagging lumber, curtains and diaphragms  Foundation on piles (wooden, concrete, reinforced concrete and metal piles; cantilever pile load baring pile capacity, actual loads on piles).  Well foundation (construction of the well, types and potential use of wells; well protection from flooding) and kesoni  EXERCISES:  During the semester, it is foreseen combined lecturing in combination with the practical narration in the geotechnical lab.  Regarding foundation topics it is foreseen a site visit in a particular construction site.  Also, regarding the foundation topics, shall be compiled a numerical task. | | | |

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|  | **Organization and Construction Technology** | | | |
|  | **Two (2) Semesters** | L+E h/w | L+E h/s | Total h |
|  | Semester VIII | 2+2 | 30+30 | 60 |
|  | Semester IX | 2+4 | 30+60 | 90 |
|  | Semester VIII  Art of construction and the nature of construction  Notions of work organization  Organizational sciences (organization, administration, management, terminology)  Construction management  Site preparatory works  Construction Technology  The notion of technology  Construction Mechanization  Machinery Economics  Planning and Programming Methods  Static Programme and Dynamic Programme  Time scheduling technique  Pricing  Unit Price Calculation  Other Methods of Calculation.  PRACTICAL WORK:  Use of norms and standards in different calculations  Teamwork in small working groups. | | | |
|  | Semester IX  Construction Project management (CPM)  Investment project and its elements  Stages of investment project,  Parties involved and their relationship  Paper work and Documentation  Project financing  Contracting of works  Planning and Project implementation control,  Interpersonal relationship within the Project,  Preparatory work  Summary of CPM  PRACTICAL WORK:  Construction Project management as follows:  Bill of quantity  Price Analysis and resources  Specification of the material  Technological analysis  Selection of machinery  Construction planning and programming  Site arrangement | | | |

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|  | **Urban Design II** | | | | |
|  | **One (1) Semester** | | L+E h/w | L+E h/s | Total h |
|  | Semester IX | | 2+4 | 30+60 | 90 |
|  | Semester IX  Urban and spatial planning, notion and meaning  Short overview of urban and spatial development  Development of urban planning in our environment  What is urban planning?  What is the urban design?  Approach Researching and drafting of Urban Planning  Workload in spatial planning relationship between knowledge and its application Timing factor in urban planning  Planning and spatial structures of the city  Urban Functions  Functionality in the city  Urban economic aspects of spatial organization of the city theoretical models of the spatial structure of the city  Methodological Complex in Urban and Spatial Planning  Fundamentals of Analytical documenting  Goals / Targets  Mathematical models in planning  Plan Implementation  PRACTICAL WORK:  Spatial and Urban city Planning | | | | |
|  | **Interior Design** | | | | |
|  | **One (1) Semester** | | L+E h/w | L+E h/s | Total h |
|  | Semester IX | | 2+3 | 30+45 | 75 |
|  | Semester IX  Introductory lecture  Primary Entrance Entries: Walls, Floors, Ceilings  Secondary elements in the interior: Fixed furniture, Mobile furniture  Tertiary elements in the interior: Paintings, Curtains, Plants  Decorating elements: Colours, Colour Circle, Impact of colours  Interior Lighting: Direct, Indirect, and Half-Indirect Lighting  EXERCISES:  Each student will compile Interior design of a particular premise | | | | |
|  | **Diploma** | | | | |
|  | **One (1) Semester** |  | |  | Total h |
|  | Semester IX |  | |  | 450 |

Tabular view of Subjects

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Semester | **I** | **II** | **III** | **IV** | **V** | **VI** | **VII** | **VIII** | **IX** | **X** |
|  |  | S | L+U | L+U | L+U | L+U | L+U | L+U | L+U | L+U | L+U | L+U |
| 1 | Architectural Drawing | 1 | 1+3 |  |  |  |  |  |  |  |  |  |
| 2 | Descriptive Geometry | 2 | 3+3 | 3+3 |  |  |  |  |  |  |  |  |
| 3 | Hand Drawing I | 2 | 2+2 | 1+2 |  |  |  |  |  |  |  |  |
| 4 | The Fundamentals of Architectural Design I | 2 | 2+2 | 2+2 |  |  |  |  |  |  |  |  |
| 5 | Architectural Structures I | 2 | 2+2 | 2+4 |  |  |  |  |  |  |  |  |
| 6 | Mathematics | 2 | 2+3 | 2+2 |  |  |  |  |  |  |  |  |
| 7 | Construction Materials | 1 |  | 2+1 |  |  |  |  |  |  |  |  |
| 8 | The Fundamentals of GND and CSD I | 2 | 2+0 | 2+0 |  |  |  |  |  |  |  |  |
| 9 | The Fundamentals Marxist Philosophy | 2 | 2+0 | 2+0 |  |  |  |  |  |  |  |  |
| 10 | Geometric Perspective | 1 |  |  | 2+3 |  |  |  |  |  |  |  |
| 11 | Hand Drawing II | 2 |  |  | 1+2 | 1+2 |  |  |  |  |  |  |
| 12 | The Fundamentals of Architectural Design II | 2 |  |  | 2+3 | 2+3 |  |  |  |  |  |  |
| 13 | Architectural Structures II | 2 |  |  | 2+3 | 2+3 |  |  |  |  |  |  |
| 14 | History of Architecture I | 2 |  |  | 2+3 | 2+3 |  |  |  |  |  |  |
| 15 | Mechanics | 1 |  |  | 2+2 |  |  |  |  |  |  |  |
| 16 | The Resistance of Materials | 1 |  |  |  | 2+2 |  |  |  |  |  |  |
| 17 | Geodesy | 1 |  |  |  | 2+1 |  |  |  |  |  |  |
| 18 | Sociology | 2 |  |  | 2+0 | 2+0 |  |  |  |  |  |  |
| 19 | The Fundamentals of GND and CSD II | 2 |  |  | 2+0 | 2+0 |  |  |  |  |  |  |
| 20 | Design of Housing Buildings | 3 |  |  |  |  | 3+4 | 2+3 | 1+4 |  |  |  |
| 21 | Design of Public Buildings | 4 |  |  |  |  |  | 2+3 | 2+3 | 2+4 | 2+4 |  |
| 22 | Architectural Structures III | 2 |  |  |  |  | 2+2 | 1+2 |  |  |  |  |
| 23 | The History of Architecture II | 2 |  |  |  |  | 3+0 | 2+0 |  |  |  |  |
| 24 | History of Art | 2 |  |  |  |  | 2+0 | 2+0 |  |  |  |  |
| 25 | The Fundamentals of Urban Design | 1 |  |  |  |  |  | 2+3 |  |  |  |  |
| 26 | The Statics of Architectural Structures | 2 |  |  |  |  | 2+3 | 2+3 |  |  |  |  |
| 27 | Wooden Structures | 1 |  |  |  |  |  | 2+1 |  |  |  |  |
| 28 | Installations Water supply, Electric, Mechanical |  |  |  |  |  |  |  |  |  |  |  |
|  | Water supply and waste water installations | 1 |  |  |  |  | 1+1 |  |  |  |  |  |
|  | Electric Installations | 1 |  |  |  |  | 2+1 |  |  |  |  |  |
|  | Mechanical installations | 1 |  |  |  |  | 1+1 |  |  |  |  |  |
| 29. | Programming | 1 |  |  |  |  | 2+2 |  |  |  |  |  |
| 30. | Design of Industrial Buildings | 3 |  |  |  |  |  |  | 2+3 | 2+3 | 2+4 |  |
| 31 | Urban Design 1 | 2 |  |  |  |  |  |  | 3+3 | 2+4 |  |  |
| 32. | Concrete Structures | 2 |  |  |  |  |  |  | 2+3 | 2+3 |  |  |
| 33. | Metal Structures | 1 |  |  |  |  |  |  | 2+1 |  |  |  |
| 34. | Spatial Structures | 1 |  |  |  |  |  |  |  | 2+1 |  |  |
| 35. | Foundation Structures | 1 |  |  |  |  |  |  |  | 2+0 |  |  |
| 36. | Organization and Construction Technology | 2 |  |  |  |  |  |  |  | 2+2 | 2+4 |  |
| 37. | Urban Design II | 1 |  |  |  |  |  |  |  |  | 2+4 |  |
| 38. | Interior Design | 1 |  |  |  |  |  |  |  |  | 2+3 |  |
|  | Diploma | 1 |  |  |  |  |  |  |  |  |  | 5+25 |

L-lectures hours per week U-exercises hours per week S-number of semesters per subject