SUMMARY OF DISCIPLINES: ACADEMIC PROGRAM 270301.65 ARCHITECTURE

Index	Name of the discipline	Total number of
		hours
1	2	3
ГСЭ	General humanitarian and socio-economic academic disciplines	1800
ГЭС. Ф.00	Federal component	1292
ГЭС.Ф .01	FOREIGN LANGUAGE	340
	Learning Outcomes. The aim of teaching the discipline: "Foreign Language" in Technical University is to provide means to improve practical skills and language proficiency in a students' chosen speciality for active use of foreign languages for professional and everyday communication.	
ГЭС. Ф02	PHYSICAL CULTURE	408
	Learning Outcomes. The aim of teaching the discipline: Providing physical training for university students' is to develop their individual physical culture and improve their ability to use a variety of tools/equipment applied in physical training, sport and tourism. The aim is to preserve and strengthen students' health, psycho-physical training; and to prepare them for their future professional activity.	
ГЭС. Ф03	NATIONAL HISTORY	90
	Learning Outcomes. The aim of teaching the subject: National history as a humanitarian discipline is to give students' knowledge of Russian history and to teach them how to analyse and summarise the history, based on patriotism and respect for the historical value of other peoples and nations systems.	
ГСЭ. Ф.4	POLITICAL SCIENCE	64
	Learning Outcomes. The aim of teaching the discipline: "Political Science" is to acquaint students with the basics of political science, to give them an insight to the complicated world of politics, and to help correctly interpret an ongoing political process.	

ГСЭ.		64
Ф.5	PSYCHOLOGY AND PEDAGOGY	
	Learning Outcomes. The aim of teaching the discipline: is to develop psychological and pedagogical culture for a future professional.	
ГСЭ. Ф.6	SOCIOLOGY	90
	Learning Outcomes. The aim of teaching the discipline: "Sociology" is to give a future specialist, the knowledge of society; how it functions, and the nature of human intergroup and intragroup interactions, humans as social beings, and to promote a culture of sociological thinking in professional and public life.	
ГСЭ. Ф.7	PHILOSOPHY	133
	Learning Outcomes. The aim of teaching the discipline: "Philosophy" is to familiarise students with the basic teachings and stages of philosophical knowledge, how it forms and develops, to acquire a holistic view of processes and phenomena that occurred in animate and inanimate nature and social life, to explain scientific, philosophical and religious interpretations of the universe, nature, purpose and meaning of human life, variety of forms of human knowledge, relationship between truth and misconception, knowledge and faith, rational and irrational in human life, and to understand how knowledge is constructed in modern society.	
ГСЭ. Ф.8	ECONOMICS	103
	Learning Outcomes. The aim of teaching the discipline: "Economics" is to explain the basics of economical thinking to students, to develop their ability to reasonably evaluate economic problems, both in the national economic scale, and their personal daily life, to be able to make effective economic decisions.	
ГСЭ.Р	National and regional (university) component	272
.00 ГСЭ. Р.1	JURISPRUDENCE	134
	Learning Outcomes. The aim of teaching the discipline: Understanding the general social typology of legal systems; Studying the fundamentals of legal concepts; Ability to identify a relationship between the content of legal norms and actual public events;	

Correct understanding of law and legislation systems, as well as development of basic skills in juridical thinking.	
CULTURAL STUDIES	68
Learning Outcomes. The aim of teaching the discipline: "Cultural Studies" is to form a basis for students' cultural development, so they can gain general and specialised understanding within the creative and constructive fields of knowledge. This course is important because it deals with universal ideals and values, which play a fundamental role in the spiritual development of a person. Cultural education in universities is aimed at developing a students' understanding of humanity, and their moral and aesthetic senses, awakening their interest in creative exploration of the world's cultural heritage.	
ARCHITECTURAL ENVIRONMENT	36
Learning Outcomes. The aim of teaching the discipline: is to give a general cultural and professional knowledge of skills, which can be utilised to create environmentally comfortable architectural and urban designs.	
Learning objectives of the discipline: Understanding environmental and architectural issues; Understanding fundamentals of ecological sustainability; Development of skills and knowledge required to create design solutions, based on environmental principles, including the design of: objects, architecture and urban planning.	
ARCHITECTURAL LEGISLATION	34
Learning Outcomes. The aim of teaching the subject: is to introduce students to the unknown territory of "law and legal rights".	
Elective courses set by university	66
RUSSIAN LANGUAGE AND CULTURE OF SPEECH	66
	CULTURAL STUDIES Learning Outcomes. The aim of teaching the discipline: "Cultural Studies" is to form a basis for students' cultural development, so they can gain general and specialised understanding within the creative and constructive fields of knowledge. This course is important because it deals with universal ideals and values, which play a fundamental role in the spiritual development of a person. Cultural education in universities is aimed at developing a students' understanding of humanity, and their moral and aesthetic senses, awakening their interest in creative exploration of the world's cultural heritage. ARCHITECTURAL ENVIRONMENT Learning Outcomes. The aim of teaching the discipline: is to give a general cultural and professional knowledge of skills, which can be utilised to create environmentally comfortable architectural and urban designs. Learning objectives of the discipline: Understanding environmental and architectural issues; Understanding fundamentals of ecological sustainability; Development of skills and knowledge required to create design solutions, based on environmental principles, including the design of: objects, architecture and urban planning. ARCHITECTURAL LEGISLATION Learning Outcomes. The aim of teaching the subject: is to introduce students to the unknown territory of "law and legal rights".

ГСЭ. B1.2	BUSINESS PAPERS	66
	Learning Outcomes. The aim of teaching the subject: in-depth study of language and style of documents and documentation systems in their historical development; fundamentals of accounting; business finance; theoretical and practical problems associated with the preparation of documentation for institutions of organisational and legal form.	
ГСЭ. B2.1	PHILOSOPHY OF ART	170
	Learning Outcomes. The aim of teaching the subject: is to develop a students' understanding of the basic concepts and ideas of the modern philosophy of art, as well as to develop their value system, and promote their self-realization in conditions of current scientific, technological, economic and spiritual realities.	
ГСЭ. B2.2	TEMPLE ART	170
	Learning Outcomes. The aim of teaching the subject: is to develop a students' understanding of basic concepts and ideas of church and temple art, as well as to develop their value system, and to promote their self-realization in conditions of current scientific, technological, economic and spiritual realities.	
EH	General mathematics and natural sciences	834
ЕН.Ф 00	Federal component	714
ЕН.Ф. 01	MATHEMATICS	100
	Learning Outcomes. The aim of teaching the subject: "Mathematics" is to help students' master mathematical methods and to improve their ability to find optimal solutions to problems which they face in everyday life, as well as to familiarise them with the basic concepts of mathematics, terms and methods of construction of mathematical proof, and solving applied problems.	

ЕН.Ф.		136
02	INFORMATICS AND COMPUTER BASICS	
	Learning Outcomes. The aim of teaching the subject: introduction of basic principles of computer science, fields of application, possible future development, methods of operation and use of informatics for problem solving. The main research areas of computer science are information systems related to information processes and information technology, investigated through a systematic approach.	
ЕН.Ф. 03	THEORETICAL MECHANICS	140
	Learning Outcomes. The aim of teaching the subject: "Theoretical Mechanics" is one of the most important basic disciplines for architectural students in their technical training. It consists of three sections: rigid body statics (theoretical mechanics), elastic body statics (strength of materials), and statics of structures, the three sections are studied in sequence and form a single integrated course. The aim of the discipline is to develop a student's understanding of how building structures work under load.	
ЕН.Ф. 04	DESCRIPTIVE GEOMETRY AND MECHANICAL DRAWING	198
	Learning Outcomes. The aim of teaching the subject: "Descriptive Geometry" is to improve a students' logical thinking, which together with spatial imagination helps in solving engineering problems and developing correct technical drawings.	
ЕН.Ф. 05	PHYSICS	140
	Learning Outcomes. The aim of teaching the subject: is for students to gain knowledge in the basics of physical and technical aspects of urban planning and building design, as well as to gain skills in applying this knowledge to architectural design.	
EH.P. 1	THERMO-PHYSICS AND VENTILATION OF VOLUME AND SPACE	68
	Learning Outcomes. The aim of teaching the subject: is for students to master the basics of thermos-dynamics and heat transmission; to gain familiarity with how temperature and humidity of air in buildings can be regulated and sustained;	

	teach about heating of buildings; air-ventilation and air-conditioning; heating of industrial and civil buildings, buildings' engineering networks, their location in buildings, as well as being able to make competent technical decisions in building network layouts in terms of sanitation, economy, architectural design, health, safety, codes, regulations, and	
	project construction and installation.	
EH.B. 00	Elective courses set by university	52
EH.B 1.1	MATHEMATICAL METHODS IN ARCHITECTURE	52
	Learning Outcomes. The aim of teaching the subject: "Mathematical Methods in Architecture" is to give a future professional the knowledge and practical skills to overcome challenges in development and application of mathematical methods in architectural design and project management.	
EH.B 1.2	GEOMETRY OF FORMS AND BIONICS	52
	Learning Outcomes. The aim of teaching the subject: to introduce students to the field of novel form-finding and new design solutions based on the study of nature.	
опд	General professional disciplines	3247
ОПД. Ф.00	Federal component	2941
ОПД. Ф.01	CONSTRUCTION OF CIVIL AND INDUSTRIAL BUILDINGS	327
	Learning Outcomes. The aim of teaching the subject: "Construction of civil and industrial buildings" is to provide experience in design work, methods of constructive implementation of designed objects, implementation of integrated design solutions using advanced modern constructions, interesting design solutions, traditional and new building technologies.	
ОПД. Ф.02	ARCHITECTURAL MATERIALS	112
	Learning Outcomes. The aim of teaching the subject: is to give architectural students the overall knowledge of materials used in modern architectural and building practice, so that they are able to apply a wide range of building materials and products that are technically appropriate and economically feasible.	
	I	1

ОПД. Ф.03	FUNDAMENTALS OF GEODESY, ENGINEERING	144
	LANDSCAPING OF URBAN AREAS AND TRANSPORTATION	
	Learning Outcomes.	
	The aim teaching the subject: is to introduce students to a discipline	
	without basic knowledge of which it is impossible to imagine any construction work, or practical implementation of certain architectural	
	ideas; teach the basics of geodesy and photogrammetry. The knowledge of this subject would expand a students' understanding of architectural profession and instil their interest in it.	
ОПД.		72
Ф.04	BUILDING SERVICES	72
	Learning Outcomes.	
	The aim of teaching the subject: is to develop a students' theoretical and practical knowledge in the design basics of buildings and their	
	construction elements, structural systems as well as the structure of cities	
	and town services, knowledge of which is essential for the practical creative	
	work of an architect.	
ОПД.		72
Ф.05	FUNDAMENTALS OF CONSTRUCTION INDUSTRY	
	Learning Outcomes. The aim of teaching the subject: "Fundamentals of construction industry" is to provide students with the knowledge and practical skills that they can apply to various production processes using efficient building materials, constructive solutions, modern technical equipment, apply technical design processes and structural systems and use progressive setup of construction processes.	
ОПД. Ф.06	LIFE SAFETY	36
	Lograina Outcomes	
	Learning Outcomes. The aim of teaching the subject: is to develop knowledge and skills	
	needed to create a safe operating environment during a construction	
	process, utilisation of equipment and technological processes, as well as forecasting and mitigation of natural disasters, accidents and catastrophes.	
ОПД.		143
Ф.07	ECONOMICS AND ORGANISATION OF ARCHITECTURAL DESIGN AND CONSTRUCTION	
	Learning Outcomes.	
	The aim of teaching the discipline: "Economics and organisation of	
	architectural design and construction" (in accordance with the requirements of State Educational Standards) is to teach students the basics of economics	
	and organisation of architectural design; construction organisation and	

	economy, architectural regulations and standards, and to provide students with opportunity to gain skills in creating cost-effective architectural designs, efficiency of which is measured by both architectural and economic parameters; and to be able to compile and study official documentation which is required to start an architectural design office.	
ОПД. Ф.08	DRAWING	701
	Learning Outcomes. The aim of teaching discipline: "Drawing" (in accordance with the requirements of State Educational Standards) is to train architects who have fundamental knowledge of drawing and have practical drawing skills; implementing these skills to produce creative architectural design solutions. The effectiveness of a students' performance within this discipline is assessed by the level of assimilation of theoretical knowledge and the development of practical skills, as well as a students' ability to produce creative design work, all of which is essential for their architectural professional training.	
ОПД. Ф.09	PAINTING AND ARCHITECTURAL COLOURISTIC	330
	Learning Outcomes. The aim teaching the discipline: is to prepare an architect with expertise in painting and colouristic, capable to understand the specifics of painting; knowledgeable in colouristic techniques and able to use colour in architectural design practice.	
ОПД. Ф.10	SCULPTURE AND SCULPTURAL-PLASTIC MODELLING	220
	Learning Outcomes. The aim of teaching the subject: "Sculpture and sculptural-plastic modelling" (as required by State Educational Standards) is to train architects who know the basics of sculpture and sculptural-plastic modelling and apply this knowledge to create their architectural design projects.	
ОПД. Ф.11	HISTORY OF ART	150
	Learning Outcomes. The aim of teaching the subject: is to teach architectural students about the history of art and culture, knowledge of which is necessary to study general and specialised subjects in creative and constructive fields. Introduction to the history of world art is an integral part of an architect's training, as it improves intellectual capacities of those who soon would have to make their own creative decisions.	

ОПД.		324
Ф.12	HISTORY OF ARCHITECTURE, URBAN PLANNING AND DESIGN	324
	Learning Outcomes. The aim of teaching the subject: is to give students' the knowledge	
	about fundamental phenomena and trends in the world of architecture, urban planning and design, about the history of their development, and about major monuments and design of works of world architecture and urban planning. Teach how to use this knowledge to master methods of architectural analysis in their professional work.	
ОПД. Ф.13	MODERN ARCHITECTURE AND DESIGN	112
	Learning Outcomes. The aim of teaching the subject: "Modern architecture and design" is to teach students the fundamentals of architectural design and the dialectical relationship between regional, national and global aspects of modern architecture, to deepen their understanding of the impact of historical socio-cultural processes on the development of modern architecture and urban planning.	
ОПД. Ф.14	MODERN CHALLENGES IN HISTORY AND THEORY OF ARCHITECTURE, URBAN PLANNING AND DESIGN	92
	Learning Outcomes. The aim of teaching the subject: "Modern challenges in history and theory of architecture, urban planning and design" is to introduce students to a diverse range of historical and theoretical problems studied within the fields of architecture and urban planning.	
ОПД. Ф.15	ARCHITECTURE AND DESIGN AESTHETIC	72
	Learning Outcomes. The purpose of teaching the subject: "Architecture and Design Aesthetic" is to develop a students' understanding of the aesthetics and philosophy of art movements; to familiarise them with the fundamentals of national and foreign modern aesthetic concepts; and to develop skills for practical implementation of aesthetic knowledge in architectural design processes.	
ОПД. Ф.16	INTRODUCTION TO THE PROFESSION	36
	Learning Outcomes. The aim of teaching the subject: "Introduction to the profession" is to deepen a students' understanding and expectation of the profession of architecture, featuring architectural design processes as a complex socio-	

	cultural phenomenon, interacting with both society and the environment.	
ОПД. Р.1	HISTORY OF ARCHITECTURE, DESIGN AND URBAN PLANNING AND URAL MAGNITOGORSK Learning Outcomes. The aim of teaching the subject: to deepen a students' knowledge of architectural design history and to develop their understanding of historical concepts and typology of architecture and urban planning, using examples of architecture in Southern Urals and the city of Magnitogorsk.	100
ОПД. Р.2	ARCHITECTURAL ENIOLOGY Learning Outcomes. The aim of teaching the subject: is to give students an introduction into the scope of architectural eniology: energy-exchange interaction between people and built environment	36
ОПД. B.00	Elective courses set by university	170
ОПД. В1.1	INTERIOR DESIGN Learning Outcomes. The aim of teaching the discipline: "Interior Design" is to broaden a students' experience and expertise in design workflow and to deepen their understanding of interior design as an integral part of the overall Architectural Design process. To teach students how to use integrated, iterative thinking in interior design. Architectural design methodology	170
ОПД. В1.2	forms a theoretical foundation of the "Interior Design" discipline. DESIGN Learning Outcomes. The aim of teaching the subject: "Design" is to give students a broader knowledge and experience in exterior and interior design, treating both as equally important parts of a design process. To teach students how	170
	to use integrated, iterative thinking in design. Architectural design methodology forms a theoretical foundation of the discipline: "Design".	
СД	Special subjects	3420
СД.Ф 01	ARCHITECTURAL DESIGN	1476
	Learning Outcomes. The aim of teaching the subject: "Architectural design" is to develop a students' knowledge and skills in the creation of architectural and urban	

spaces, responding to the complex of requirements of environment, society and individual customers.

Learning objectives of the discipline:

As a result of studying the discipline the student should:

have knowledge of:

- Typology of civil and industrial buildings;
- Expertise in the design of modern types of civil and industrial buildings;
- Fundamentals of structure of architectural and urban facilities;

he able to:

- Generate creative design solutions;
- Use judgement and evidence-based reasoning;
- Competently portray verbal, graphic, three-dimensional, digital and other models of architectural objects;
- Produce working drawings, such as facades, plans and sections;
- Present and defend the project in front of the customer;
- Conduct architectural supervision.

have skills in:

- Modern tools of architectural design representation, be able to communicate design ideas using various graphic and physical modelling techniques,
- Modern design techniques of functional; planning; structural, economic, environmental and other factors of architectural environment.

СД. Ф. 02

THREE-DIMENSIONAL COMPOSITION

Learning Outcomes.

The aim of teaching the discipline: is to develop student's personal understanding of composition and their ability to reach compositional objectives in design of three-dimensional objects in architectural space.

Learning objectives of the discipline:

As a result of studying the discipline the student should:

have knowledge of:

- General patterns of spatial composition in other forms of art;
- Types of composition and properties of three-dimensional shapes;
- Rules of constructing three-dimensional shapes;
- Tools and techniques to achieve specific compositional goals of three-dimensional shapes;

be able to:

- To solve compositional problems in the design of threedimensional objects in architectural space
- Solve design problems based on research, critical analysis of design iterations and acquired knowledge
- Be able to communicate compositional design solutions in a variety of ways, such as physical models, drawings, diagrams etc.

have skills in:

Reaching compositional objectives in the design of threedimensional objects in architecture 270

СД.Ф. 03	SOCIAL AND ENVIRONMENTAL FUNDAMENTALS OF ARCHITECTURAL DESIGN	70
	Learning Outcomes. The aim of teaching the discipline: is to familiarise students with a range of fundamental aspects of social and environmental theory of architectural design, and to further develop students' training of in the field of architectural design. To develop a student's understanding of the relationship between architecture and its future impact on local people, culture and environment as well as to deepen their knowledge in ecology and sustainable design principles and how they can inform architectural design solutions.	
СД.Ф. 04	FUNDAMENTALS OF URBAN AND REGIONAL PLANNING THEORY	70
	Learning Outcomes. The aim of teaching the discipline: «Fundamentals of Urban and Reginal Planning Theory» is to introduce students to the fundamentals of theory behind urban planning and regional planning, and to develop a deeper understanding and interpretation of architectural profession and its features, in its complexity as a social and cultural phenomenon, interacting with society and environment.	
СД.В. 00	Electives	300
СД.В 1.1	ARCHITECTURAL AND ARCHITECTURE-AND-ART UNDERGRADUATE RESEARCH WORK Learning Outcomes. The aim of teaching the discipline «Architectural and Architecture-and-Art Undergraduate Research Work» is to develop a students' knowledge and skills in independent undergraduate research work in the field of Architecture and Arts, supervised by one of the academics. Research work needs to be project or experiment based, revolving around one the topics established by the faculty, such as: - Environmental architecture in Magnitogorsk; - Preservation and reconstruction of historical architectural environment in Magnitogorsk city; - Architectural monuments of Southern Urals. The findings of the undergraduate research work would form the basis for	300

Спр		300
СД.В 1.2	ARCHITECTURAL AND ARCHITECTURE-AND-DESIGN	300
1.2	UNDERGRADUATE RESEARCH WORK	
	01,210_112 011_ 102_110_2 ,,, 01112	
	Learning Outcomes.	
	The aim of teaching the discipline «Architectural and Architecture-	
	and-Design Undergraduate Research Work» is to develop a students'	
	knowledge and skills in independent undergraduate research work in the	
	field of Architecture and Design, supervised by one of the academics.	
	Research work needs to be project or experiment based, revolving around	
	one the topics established by the faculty, such as:	
	- Environmental architecture in Magnitogorsk;	
	- Preservation and reconstruction of historical architectural	
	environment in Magnitogorsk city;	
	- Architectural monuments of Southern Urals.	
	The findings of the undergraduate research work would form the basis for	
	the graduate architectural project (research thesis).	
CH H		4200
СД.Д С.00	Specialist Disciplines	1390
СД.Д		240
С.Ф.1	ARCHITECTURE OF MAGNITOGORSK AND SOUTHERN	270
0.4.1	URALS	
	Learning Outcomes.	
	The aim of teaching the discipline:	
	- Develop deeper understanding of history and typology of	
	architecture and urban planning, using examples of architecture of	
	Southern Urals and Magnitogorsk.	
	- Be able to solve pedagogical tasks, such as participation in social	
	programs of architectural education to promote architecture in	
	society;	
	- Improve quality of education and training of architecture	
	graduates;	
	- Improve cultural competence of graduates;	
	- Overall development of their personality;	
СПП		830
СД.Д С.Ф.2	ARCHITECTURAL DESIGN PRINCIPLES	030
C.W.2	ANOMITECTORAL DESIGN I RINCH LES	
	Learning Outcomes.	
	The aim of teaching the discipline: «Architectural design principles»	
	is to make sure that students are prepared to carry out an independent	
	graduate design project. (Research thesis).	
	Learning objectives of the discipline: This course is part of an	
	integrated program for the professional training of future architects.	
	According to curriculum, the "Architectural design principles" course is	
	taught to 5 th -6 th year students. To pass this course student have to develop	
	an independent architectural design project. (Graduate research thesis); this	
	research has to be supervised by one of the academics.	
	As a result of studying the discipline the student should:	

have knowledge of: Fundamentals of history of architecture; Architectural theory; Design standards and regulations; Important design projects developed by leading international and national architects be able to: Inform design solutions using architectural precedents, environmental context and other acquired knowledge; Know how to create designs following architectural norms and regulations, concepts, standards, and design rules; Be able to work with the legal documents (GOST, SNIP, design manuals, and design recommendations); Use imagination, think creatively, develop innovative solutions and work as a leader in a design process; Critically analyse architectural space, planning and design solutions; and potential technical issues of project implementation Know how to integrate architectural objects into existing urban context: have skills in: Communicating design ideas; Development of technical and presentational drawings of proposed urban development, and architectural or art objects; Carrying out independent research investigating cultural, historical, constructional, functional and aesthetical aspects of any design problem and be able to make informed design decisions based on this research СД.Д 320 С.Ф.3 ARCHITECTURAL, **ARCHITECTURE-AND-ART** OR ARCHITECTURE-AND-DESIGN UNDERGRADUATE DESIGN WORK **Learning Outcomes.** The aim of teaching the discipline: «Architectural, Architectureand-Art or Architecture-and-Design Undergraduate Design Work» is to develop skills and knowledge necessary to produce an independent design project (Graduate research thesis), supervised by one of the academics, using the findings of "Architectural and Architecture-and-Design Undergraduate Research Work" or "Architectural and Architecture-and-Art Undergraduate Research Work". Φ.00 **Electives** 450 ФТД.1 450 FOREIGN LANGUAGE IN THE FIELD OF PROFESSIONAL ACTIVITY **Learning Outcomes.** The aim of teaching the discipline: The main objective of the course "Foreign language in the field of professional activity", taught at Technical University, is to teach practical

language skills and proficiency for active use of a foreign language in professional communication.

Practical language skills are evaluated by the student's ability to use foreign language confidently and clearly, employ common phrases and idioms, and be proficient in: speaking, listening, reading and writing. Practical language skills in the field of professional activity also imply to a student's ability to work with specialised literature written in foreign language, and their ability to extract and utilise specialised information in professional communication.