

COURSE DESCRIPTIONS 2013/2014
DEPARTMENT OF ARCHITECTURE SECOND CYCLE COURSE DESCRIPTIONS

First year

Compulsory courses

ARC 555. ARCHITECTURAL DESIGN VI

Hours (Theoretical-Practical): 0+6

ECTS: 6

The courses Architectural design VI – VIII enable students to understand the principles of design process of high complex buildings dispositions and practical exercises of design process for the buildings with sport, cultural, commercial and other purposes such as: shopping malls and other commercial buildings, facilities for sport and recreation and buildings for the culture. Through presentation of world known examples of these buildings, students will learn the principles and methods of its designing, as well as needs, different dispositions and types, standards and etc. The final result of this course is student's independent work on the project of building from mentioned types above.

ARC 556. ARCHITECTURAL DESIGN VII

Hours (Theoretical-Practical): 0+6

ECTS: 6

Course Architectural design VI – VIII enables students to understand the principles of designing buildings with complex disposition and to train them into the design process of sports buildings, cultural and commercial buildings, shopping centers, and other types of commercial buildings and buildings for sports and recreation. Through world well-known examples, students will observe the principles and methods of designing, as well as the need of different dispositions and types, standards and similar. The final result of the course is an individual student work.

Elective Courses

ARC 503. ENGINEERING STRUCTURES

Hours (Theoretical-Practical): 3+0

ECTS: 6

The subject of an insight into the basics constructions settlement of buildings. Engineering structures offered knowledge about the functions and certain types of constructive solutions. It identifies modern technologies, modern materials and technological advances and use them through constructive systems. Structural dynamics, elasticity is an essential element of research. It covers following topics:

- Introduction to constructive systems
- The main structural elements
- Structural dynamics
- The theory of elasticity and plasticity
- Advanced Construction Materials
- Theory of plates and shells
- High buildings
- Elastic stability and behavior of metal structures
- Modern reinforced concrete structures
- Infrastructure engineering

- Composite structures
Structural optimization

ARC 559. ENERGY EFFICIENT ARCHITECTURE

Hours (Theoretical-Practical): 3+0

ECTS: 6

The course of Energy and Environmental architecture provides basic knowledge about the sustainable architecture, energy efficiency of buildings, materials used and method of construction of sustainable buildings research. It covers following topics:

- Energy sources and improving the environment, the overall situation and development strategy. Conventional and renewable energy sources and their impact on security.
- Ecology as a starting point and framework within which energy is important for urban planning and architectural design.
- Historical development and technology exploiting solar energy.
- Active (installation) systems, photovoltaic cells, hybrid and passive solar architectural elements and systems
- Bioclimatic approach to spatial planning, urban design and architecture. Prerequisites: air, microclimate, geographic characteristics, insulation, topographic and other natural and artificial factors. Physics building.
- Energy rational, low energy and energy efficient architecture.
- Passive solar architecture (PSA) - specific types; self-sufficient, "smart" homes
- Natural day lighting as a way to use passive solar energy.
- Calculation methods, dimensioning, design and simulation
- Energy and environmental restoration of newer and historic architecture. 11th
- The architecture and ecology. The ecological approach to local and global level
- Healthy building, hygiene materials.
- Natural House. Permaculture.
- Energy-efficient passive solar building material. Production and architectural elements.

Perspectives of development

ARC 560. URBAN PLANNING II

Hours (Theoretical-Practical): 3+0

ECTS: 6

Understanding of the complexity of development process in contemporary cities. Introduction with factors and designers of urban development and construction. Developing the ability to identify and define problems in urban structure. Developing the logical and creative thinking, clarity of communication and implementation of regulated search.

The course presents an introduction to research in urban planning and include introduction with contemporary urban phenomenon, the dominant factors of the urban structure and the basic methods and techniques in the analysis and planning of the spatial organization of the city. Detecting basic patterns of urban structure associated with learning about the most important social, economic, environmental and technological factors affecting their genesis and transformation. The course includes basic techniques and methods of analysis and assessment of the quality of urban structure with inclusion of different values and interests. One of the important tasks of the course is to encourage critical and creative thinking to prepare students for professional work in the design of alternative paths of cities development in the

future.

ARC 581. DESIGN WITH PREFABRICATED BUILDING ELEMENTS

Hours (Theoretical-Practical): 3+0

ECTS: 6

This Course gives basic knowledge about how to use prefabricated elements and decorative elements in architecture. Prefabricated elements are generally used in building industrial type buildings and buildings with multi-purposes. Design with such elements ensures fast building which gives them advantages. In the modern time, such elements are used more, and the term of sustainability is connected to prefabricated elements. Today, these elements are part in each building and are becoming very important in the construction industry. This course will give basic knowledge about their advantages and disadvantages, possible uses, and where to use them.

ARC 519. PRESERVATION STUDIO I – DESIGN IN HISTORICAL CONTEXT

Hours (Theoretical-Practical): 3+0

ECTS: 6

The course Preservation Studio 1 – Designing in Historical Context provides students with basic knowledge about contextual design, ie, the design of new buildings in historical context, in the broadest sense. The course enables the students that while designing of new structures, regardless of scale, are fully aware of the current context, to learn to perceive its value, and to achieve with it successful visual communication.

ARC 572. METHODOLOGY OF CONDUCTING SCIENTIFIC RESEARCH

Hours (Theoretical-Practical): 3+0

ECTS: 6

This course presents the basic knowledge related to quantitative and qualitative research methods. To use these methods in different professions. Special focus will be put on the research analysis of works and methods that can be used for analysing the architectural works. This course will give students a good basis for starting their researches.

- Hypothesis formulating
- Samples taking
- Research design
- Gathering data and gathering strategy
- Validity and reliability of data and methods for managing used in researching,
- Qualitative analysis of data
- Non-parametric analysis of data
- Factorial analysis of data
- Statistical analysis of data
- Use of data

ARC 521. THE COMPLEX INSTALLATION SYSTEMS

Hours (Theoretical-Practical): 3+0

ECTS: 6

This Course presents a preview in the choice of optimal energetic system for thermo-technical installation. To find the satisfying solutions for air and water installation. To introduce the internal and external factors affecting the convenience of staying in a particular architectural and structural area, with special emphasis on labor and production units.

- Introduction to the thermal installation – Representative buildings in the city,
- Basics of finding energy concepts and the choice for new and in-use

- buildings,
- Characteristic examples of optimal installation in buildings,
- Health basics, the effect of heat on the body in working ambient,
- Analysis of basic factors that affect the comfort
- Classification of installation systems,
- Zonal and multichannel systems,
- Induction systems,
- Integral scheme of systems
- Air distribution in the building
- The control-monitoring system, waste and energy savings, protection and control,
- Application, life time, demounting, and testing the installations systems
- Analyzing the effect of thermo-technical system on architectural solution

ARC 553. ARCHITECTURAL SURVEY METHODS

Hours (Theoretical-Practical): 3+0

ECTS: 6

This course aims to achieve the perception of students and the connection between architecture and geodesy, with a special focus on the possibility of using geodetic methods and techniques in architecture, conservation of heritage, urban and regional planning.

Surveying methods of data collection includes a full range of procedures such as the orthogonal method, the polar method or tacheometry, terrestrial and aerial photogrammetry, remote sensing, levelling, trigonometric determination of height, using global positioning satellites (GPS), etc. During the processing of data collected by surveyors they use computers, and processed data become a part of various spatial information systems (GIS). Results surveying is usually displayed on the maps that serve other professionals, including architects and planners for their needs. However, in the architectural survey can be successfully used tools, instruments and techniques like in surveying, and that is major focus of the course.

Second Year

Compulsory Courses

ARC 557. ARCHITECTURAL DESIGN VIII

Hours (Theoretical-Practical): 0+6

ECTS: 6

Architectural Design VI - VIII enable students to understand the principles of designing buildings with complex dispositions, and give them practical training of the process of designing buildings with sport, cultural and commercial purposes.

Through the presentation of world-renowned examples of such buildings, students will gain insight into the principles and methods of design, as well as the needs of different dispositions and types, standards, etc. The final result of this course is an independent project, made by students.

ARC 557. ARCHITECTURAL DESIGN IX

Hours (Theoretical-Practical): 0+6

ECTS: 6

This course introduces students to the alternative ways of designing contemporary cultural facilities. The studio IX encourages students to fundamental rethinking of cultural spaces, forms and typologies through a series of research exercises and

design project within small tutorial groups during studio sessions. The mission is to explore innovative architectural solutions for cultural facilities engaging issues of spatial evolution, functional organization, 'fast forward' technological development and interaction with the user. We will engage the cultural project in two manners firstly by considering the fundamental characteristics and secondly by focusing on realities and processes that have been transforming architecture and culture today. The topic of culture is treated from a wide range of perspectives: socio-economical context, future aspirations, spatiality and form, functionality and aesthetics, building method and materials, ecological and environmental issues. Students are challenged to integrate design with complex program, site demands and local socio-political context through drawings and models.

ARC 597. MASTER THESIS

Hours (Theoretical-Practical): 0+6

ECTS: 24

A Master's Thesis is a research project resulting in a substantive paper that involves original collection or treatment of data and/or results. The Master's Thesis, involves original research and exemplifies an original contribution to scholarship. Students are obliged to prepare thesis proposal with academic support of his/her mentor, upon which they can commence with their research work. In order to be able to approach thesis defense, it is obligatory for the students to publish one paper with their mentor.