

Educational cooperation offer - Courses descriptions

To our international partners like Architectural Schools and Technical Universities, we offer summer schools or workshops programs. For cooperation details, please contact **Vice-Dean for Research and International Cooperation** Joanna Jabłońska, DArch, PhD, Eng., Prof. of WUST, at joanna.jablonska[at]pwr.edu.pl

The projects are implemented under the program of the Polish National Agency for Academic Exchange — SPINAKEK — Intensive International Education Programs. The program is financed from non-competition project no. POWR.03.03.00-00-PN16 / 18 „Supporting the institutional capacity of Polish universities through the creation and implementation of international study programs” under the Knowledge Education Development Operational Program.

- **ADAPTATION OF HISTORIC INTERIORS TO THE NEW FUNCTION, WITH ELEMENTS OF PHOTOGRAMMETRY AND DESIGN THINKING**

The purpose of this course is to familiarize students with issues around an adaptation of historical interiors to modern requirements. The course consists of two parts: short theoretical introduction and a practical part, which will include students developing and delivering a project. The course will start from presentation of rules in conservatory practice and theory of conservation. Some of the best projects' examples will also be given. During the practical part of the course, students will learn about modern methods of surveying the architectural condition of historical interiors (photogrammetry and VR model preparations basics). Modern technologies used in designing objects/ facilities and services (Design Thinking) will be covered too. Additionally, students will learn how to correctly conduct assessment and exposition of the monument's preserved fixtures, as well as what to consider when assigning a new usage to a historical interior so its unique features are not lost.

Skills and knowledge obtained by the participant of the school after its completion

- Knowledge of modern and historic floors,
- Knowledge of modern and historic wall finishes,
- Knowledge of modern exposition and lightning,
- Skills of adaptation of historic interiors to the new function,
- Basic skills of Photogrammetry,
- Skills of human needs based on design according to Design Thinking method.

Prerequisites

Ability to produce architectural drawings and visualisations.

- **BIOCLIMATIC ARCHITECTURE**

The course is aimed at in-depth introduction to the bioclimatic architecture and its newest tendencies. The participants will gain the knowledge on bioclimatic design in cultural, climatic and biological context. Within the course students will learn which data should be collected onsite and they will get familiar with adequate analysis and design methodologies. Appropriate environmental strategies will be aligned with structural and technological solutions. The accessibility and effectiveness of renewable energy sources will be completed with the energy storage potential assessment. The participants will work in small

interdisciplinary teams with aim to perform in-situ preliminary research, analyse the limits and opportunities of selected sites, prepare a functional program and develop a bioclimatic building project correctly embedded in the cultural and natural environment.

Skills and knowledge obtained by the participant of the school after its completion

- Knowledge on bioclimatic and regenerative design principles,
- Knowledge and understanding of environmental strategies in bioclimatic design,
- Skills to conduct practical analysis of cultural, climatic (wind, light, temperature, etc.) and biological (plants, small animals, geological conditions, etc.) context, using adequate software,
- Skills to select and design structural (e.g. demountable, zero-waste, etc.) and technological (Building Management Systems, Combined Heat and Power Systems, integration of Renewable Energy Sources, etc.) building systems, including sustainable material selection (based on Life Cycle Analysis, embodied energy and environmental assessment),
- Skills to apply the newly gained knowledge in an architectural project of a bioclimatic building.

Prerequisites

General ability to develop an architectural design. General awareness of the current state

• BUILDING STRUCTURES DESIGN

The original calculation methods based on the theory of the flow of forces in the form of streams in the construction material allow for the shaping of the basic structural elements of the building. The elements of structural design include the connection of force systems acting on the building with its form and functional solutions. Initial discretization of construction materials enables simplified calculations for architectural conceptual design. A holistic approach to integrated design enables the implementation of optimization procedures in the very early stages of design. Constructing static diagrams of reinforced concrete elements based on projections of buildings, comparisons of loads acting on structural elements they allow to obtain building forms taking into account its physical conditions. The analysis of these objects will make it possible to get acquainted with his original methods of designing most structural elements of buildings.

Skills and knowledge obtained by the participant of the school after its completion

- Knowledge of strength properties of concrete and steel,
- Knowledge of constructing reinforced concrete elements,
- Knowledge of reinforced concrete structure in the body of a building,
- Skills to design forms of reinforced slab and rib structures, reinforced concrete coatings,
- Conducting analyses of the stiffness systems of the building structure.

Prerequisites

Skills in recording algebraic calculations and drawing static diagram using computers.

• DRAWING, PAINTING AND COMPOSITION WORKSHOP

The course is based on drawing, painting, sculpting and design workshops, supplemented by presentations of selected issues. Each of the classes and tasks performed during them will tackle a different problem on developing compositional skills. The course aims to

broaden the skills of artistic drawing, painting, sculpting and other techniques of designing space on a plane. To develop spatial imagination and compositional skills to create spatial arrangements in various modelling techniques. During the curriculum, a student learns to recognize the importance of non-technical aspects and effects of an architect's design work, including its impact on the cultural and natural environment.

Skills and knowledge obtained by the participant of the school after its completion

- Development of general plastic awareness,
- Basic ability to use selected, traditional drawing and sculpting materials and technologies,
- Finding and using in design, features bordering on sculpture, architecture and design,
- Knowledge of the basic issues in the field of spatial shaping,
- Expanding drawing, sculpting and painting skills.

Prerequisites

Openness, engagement and creativity.

- **EXPERIMENTAL DESIGN OUO/ UNIVERSITY OF UNIVERSITIES**

The aim of the workshop is to design architectural objects that enhance social interaction, local community cooperation and cultural awareness in chosen urban areas. The participants will be grouped into teams of 5 - 8 members from different universities. The workshops will include research on certain urban areas, their potential needs, preparation of scenarios for actions, social and cultural activities, preparation of conceptual design. Next, the concepts will be discussed during the mid-term presentations and further developed in terms of structural design and realisation with particular focus on reducing its environmental impact. The chosen projects will have a chance to be built as real-scale prototypes in another workshops that will take place in Wrocław between 8th and 14th August 2022 as a separate event. Please have a look at: https://youtu.be/k_NDe6ka-bo.

Skills and knowledge obtained by the participant of the school after its completion

- Ability of international group cooperation,
- Ability to exchange knowledge from different cultural backgrounds,
- Online presentation skills,
- Knowledge of pro-ecological materials in architecture and design,
- Knowledge of preparation of conceptual and executive project of small architectural objects.

Prerequisites

Ability for international online cooperation.

Knowledge of architectural design software such as AutoCAD.

- **GENERAL CONSTRUCTION 1**

The course aims to broaden the knowledge of technical drawing, technological and design solutions. The aim of the course is to introduce foreign students to technical

drawing as a universal language of architecture and to broaden the knowledge of building solutions in different regions depending on local conditions. During the course, there will be presentations supporting the design work, introducing selected issues related to the design of single-family houses and small service buildings (e.g. fire protection, green roofs, roof drainage, terrace structure over a heated and unheated room, etc.). Additionally, a trip to the Stary Zamek is planned, where there is a church from the third quarter of the 13th century, where you will be able to visit the 17th /18th century roof truss. There will be a visit to the church and a presentation on the renovation of the roof truss.

Skills and knowledge obtained by the participant of the school after its completion

- will have expanded knowledge in technical drawing, construction, and architectural documentation creation,
- will be able to elaborate on detailed design,
- will be able to carry out an architectural and construction design of a single-family building or a small service building with an area of up to 1000 m²,
- will be able to solve problems related to, among others, the construction of the building, the correct design of various building envelope elements, including energy requirements.

Prerequisites

Basic knowledge of CAD programme.

• INNOVATIVE DESIGN STUDIO: FORMING THE PUBLIC ARCHITECTURE WITH LANDSCAPE IN THE BUILT ENVIRONMENT

The “Innovative Design Studio: Forming the public architecture with landscape in the built environment” focuses each time on one of the major cities in Central and Eastern Europe and studies medium-size urban sites. This year we will have an exceptional opportunity to design in both local and exotic surroundings as we focus on designing architectural objects in various locations within Wrocław. The design theme focuses on the bionic green architecture of the multifunctional conference and exhibition pavilion that ensures harmony between built and the natural environment, maintaining ecological balance, and achieving the sustainable development. Students will be dealing with various themes (e.g., spatial, energy, societal, acoustical), sharing insights and perspectives about the multifaceted future challenges of public architecture within a given context. Students will work together also in designing part of their own study pathway by means of workshops, lectures, excursions, and other (extra) curricular activities.

Skills and knowledge obtained by the participant of the school after its completion

- Theoretical and practical knowledge to develop new concepts, functional programs, methods and practices of thinking and designing architecture,
- Knowledge of innovative design methods and contemporary trends, e.g., research by design, system thinking, design thinking,

- Skills to creatively design public buildings with complex functions and spatial programmes, in various urban contexts using an on-line educational platform, computers, BIM and holistic microclimate modelling software.

Prerequisites

Required: competence in basics of architectural design.

Desirable: ability to effectively utilize with contemporary

- **PRACTICAL DESIGN BOOST**

The course serves architecture adepts to supercharge their practical skills in preparation of context and visualise design site. It is dedicated to keen novices who want to grow their talents in using design and presentation tools. They will be guided by a practitioner-designer using these methods on regular work. There will be shown how to utilise an owned camera and computing power of the GPU. It is amazing how astonishing results can be obtained with open-source and low-cost software. We will practice methods of preparation photos for photogrammetry and try to summon a 3D model. We will enchant light spirit and do some VR inspections. If we model some details, I hope, our 3d printer meets the challenge. I'd like to show You that a well-equipped workplace for a freelance designer can be quite affordable.

Skills and knowledge obtained by the participant of the school after its completion

- Practical methods of preparing photogrammetric reconstructions,
- Ways of using spatial reconstructions for contextual modelling,
- Faster 3d modelling using hot keys shortcuts (We will use Blender),
- Methods of preparing scenes for renderings and VR inspections,
- Knowledge of 3d printer setup.

Prerequisites

No entry requirements. To make the best use of the course, it is advised that the participant dispose of a camera (>12Mpix, good mobile is enough) and owe a computer

with Nvidia GPU. The student is allowed to work on own computer.

- **RENEWAL OF SPACE BETWEEN BUILDINGS**

The course is part of education in the field of urban design, based on theoretical knowledge and practical skills in shaping urban spaces. The classes will be a combination of design classes and forms of lectures with a discussion enabling active participation, understanding the issues, acquiring knowledge and transforming it into specific solutions and design goals. The course will be conducted by a team with varied (specialistic) experience and professional interests. The course concerns the renewal of space between buildings by transforming the existing, dysfunctional and poorly developed or degraded public space (e.g. street, square, etc.). The topics dedicated to the design course are selected from the currently defined (by city authorities, associations, etc.) problematic, noteworthy places in the city. The task of students, at the beginning, is to diagnose problems related to the existing place, and then to propose

their own development concept, which will increase the aesthetics, but also the functionality and usability of this space.

Skills and knowledge obtained by the participant of the school after its completion

- Acquainting students with the issues related to the interdisciplinary nature of architectural and urban design,
- The ability to identify the needs of various groups of inhabitants (in terms of functions and spatial land development),
- The ability to develop a concept for the development of public space focused on the implementation of the diagnosed needs of inhabitants,
- The ability to use the experience acquired during the course to perform a critical analysis of conditions and formulate conclusions for design in an interdisciplinary context,
- The ability to prepare a graphic, written, and oral presentation of their original own, original urban design concepts.

Prerequisites

No entry requirements.

- **THEORY AND HISTORY OF ARCHITECTURE OF THE FIRST HALF OF THE XX CENTURY AND ITS PROTECTION**

The aim of the course is presentation a revolution which appeared in architecture of the first half of the 20th century. The following topics will be discussed: from historicisms and Art Nouveau to the new style; precursors of Modernism - Peter Behrens, Hermann Muthesius, Adolf Loos, Hans Poelzig, August Perret ... Expressionism; Functionalism in two formal trends - geometric and organic forms; new style laboratories - Bauhaus, Werkbund, CIAM; the “colorful city” trend. On the history background the problems concerning conservation of the 20. Century architecture will be presented: what to appreciate - the language of modernist architecture; German school for the conservation of modernist buildings; the Netherlands and its achievements in the field of conservation of modernist architecture; problems related to the conservation of modernist buildings in the European countries – successes and failures; Wrocław - programs for the protection of modernist heritage; Conservation Management Plan (CMP) - a new standard of monument protection.

Skills and knowledge obtained by the participant of the school after its completion

- Knowledge of the theory and practice related to the transformation of the architectural form of the first half of the 20th century,
- Knowledge of architects’ approach to new problems that appeared in the 20th century,
- Knowledge concerning features of architecture belonging to the modern movement of various formal trends,
- Knowledge concerning problems related to the restoration of modernist buildings entered in the register of monuments.

Prerequisites

No prerequisites.

- UNIVERSAL DESIGN IN ARCHITECTURE

Universal Design in Architecture summer school provide students with the skills to practically apply the principles of Universal Design and accessibility diagnosis both in public spaces and in the design of residential spaces considering individual or collective special needs, in particular people with disabilities and the elderly. Educating a new generation of designers representing a human-centered approach to design is one of the activities that bring us closer to realizing the idea of a civil society based on the principles of equal opportunities and non-discrimination. Summer school demonstrate the integrative role of Universal Design in the functioning of communities, by ensuring that as many people as possible can use architectural space independently and autonomously. Participants will experience architectural barriers through personal experience during simulation workshops. The course will be based on theoretical and practical parts, grouped in thematic blocks.

Skills and knowledge obtained by the participant of the school after its completion

- Knowledge of the concept of Universal Design,
- Knowledge of accessible design and its principles,
- Knowledge of research based on users' needs and user experience,
- Skills of analysing, observing, and experimenting with design.

Prerequisites

Competence in basics of architectural design, technical drawing and creating visualizations.



Rzeczpospolita
Polska



Unia Europejska
Europejski Fundusz Społeczny



The projects are implemented under the program of the Polish National Agency for Academic Exchange — SPINA — Intensive International Education Programs. The program is financed from non-competition project no. POWR.03.03.00-00-PN16 / 18 „Supporting the institutional capacity of Polish universities through the creation and implementation of international study programs” under the Knowledge Education Development Operational Program.