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# DISSERTATION RESEARCH THEMES DOCTORAL STUDIES ADMISSIONS FA CTU ACADEMIC YEAR 2024/25

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Doctoral Study Programs

**ARCHITECTURE AND URBANISM**

Fields of Study

**AKT** / Architecture, Building and Technology →

**ATT** / Architecture, Theory and Creation →

**DAPP** / History of Architecture and Monument Conservation →

**KA** / Landscape Architecture →

**UUP** / Urban Design and Spatial Planning →

**SMART CITIES** →

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In Prague 28th of March 2024 | Admission procedure →

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**FACULTY  
OF ARCHITECTURE  
CTU IN PRAGUE**

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**Program**

**ARCHITECTURE  
AND URBANISM**

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**Studie Field**

**ARCHITECTURE,  
BUILDING AND  
TECHNOLOGY**

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**Theme of Research**

- **Timber Architecture – Limits and Possibilities,  
the Way to Sustainability and Efficient Architecture**  
Ing. arch. Marek Pavlas, Ph.D.
- **Fair-faced Concrete in Architecture**  
Ing. Radka Pernicová, Ph.D.
- **Geometrical Patterns in Architecture and Their Structural Efficiency**  
Prof. Dr. Ing. Martin Pospíšil, Ph.D.

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**Theme of Research** **TIMBER ARCHITECTURE – LIMITS AND POSSIBILITIES,  
THE WAY TO SUSTAINABILITY AND EFFICIENT ARCHITECTURE**

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**Summary** Demand for multi-storied wooden buildings is growing. However, the idea that it is not possible to build wooden buildings with more than two floors is still strongly rooted. Objectives and main points: To show real limits of wooden construction. To point out the importance of using wood for larger buildings in the areas of: Environment, Speed and efficiency of construction, possibilities of prefabrication, Saving of human resources, Construction accuracy, Link to the use of BIM tools. Proof of hypotheses on the basis of examples of realized buildings. The aim of the work will be to contribute to a change in thinking about the possibilities and limits of wooden architecture.

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**Program** Architecture and Urbanism  
**Field of Study** AKT / Architecture, Building and Technology  
**Form** Full-time or combined

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**Number / Department** 15123 / Department Of Building Construction I  
**Supervisor** Ing. arch. Marek Pavlas, Ph.D.  
**Supervisor Specialist** —

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**Grant / Research Connection** —

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**Connection with the Department's Priority** Relationship to the coordination of the teaching of the technical Departments of FA CTU and the course Building materials.

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**Theme of Research**                      **FAIR-FACED CONCRETE IN ARCHITECTURE**

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**Summary**

The theme of Fair-faced/coloured concrete in Architecture is conceived primarily from a visual point of view and their aging over the time. The topic discusses the issue of individual types of graphic elements, their suitability for use depending on the material solution, its appearance, or the location of the building. An integral part of the work is also a description of the degradation process and the extent of visual changes during the utilization of the building, especially due to the influence of external climatic conditions.

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**Program**

Architecture and Urbanism

**Field of Study**

AKT / Architecture, Building and Technology

**Form**

Full-time or combined

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**Number / Department**

15124 / Department Of Building Construction II

**Supervisor**

Ing. Radka Pernicová, Ph.D.

**Supervisor Specialist**

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**Grant / Research Connection**    GAČR, contractual research

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**Connection with the Department's Priority**    The topic follows the priorities of the institute in terms of modern materials and their physical properties

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**Theme of Research**

**GEOMETRICAL PATTERNS IN ARCHITECTURE  
AND THEIR STRUCTURAL EFFICIENCY**

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**Summary**

Geometric patterns in living / non-living nature, their analysis using digital technologies (parameterization, algorithmization) and the possibility of optimizing their structurally and / or energetically efficient use in architectural and structural design.

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**Program**

Architecture and Urbanism

**Field of Study**

AKT / Architecture, Building and Technology

**Form**

Full-time or combined

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**Number / Department**

15122 / Department Of Load-Bearing Structures

**Supervisor**

Prof. Dr. Ing. Martin Pospíšil, Ph.D.

**Supervisor Specialist**

Ing. arch. Lukáš Kurilla, Ph.D.

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**Grant / Research Connection**

The supervisors apply for a junior grant from the Grant Agency of the Czech Republic. The PhD student will be enrolled in full-time study only if the grant is awarded, otherwise the study will be organized in a combined form.

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**Connection with the Department's Priority**

The department is testing other research possibilities at the interface of geometry and load-bearing structures (currently, a dissertation on the topic of geometry in the load-bearing structure of historic bridges is being completed at the department)

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**Program**

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# ARCHITECTURE AND URBANISM

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**Zaměření**

# ARCHITECTURE, THEORY AND CREATION

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**Theme of Research**

- **Architectural Dashboarding for the Design Process Using Digital Twins**  
prof. Dr. ir. Henri Achten
- **VR Testbed for Interactive Architecture**  
prof. Dr. ir. Henri Achten
- **Advanced Digital Sketching Including AI in the Ideation Phase**  
prof. Dr. ir. Henri Achten
- **The Impact of Maker Technology in Design Education**  
prof. Dr. ir. Henri Achten
- **Methods of Creating and Applying a Landscape Plan in the Mining Areas of the Ústí Region**  
doc. Ing. arch. Ondřej Beneš, Ph.D.
- **The Issue of the Work of a City Architect**  
doc. Ing. arch. Ondřej Beneš, Ph.D.
- **Multifunctional Institutions in the Context of the City**  
doc. MgA. Ondřej Císler Ph.D.
- **Development Projects, Their Attributes and Management**  
Mgr. Lucia Dobrucká, Ph.D.
- **Female Urban Experience in Comparative Perspective**  
doc. Hubert Guzik, Ph.D.
- **Sustainable Energy Sources from the Perspective of Architecture**  
doc. Ing. arch. Dalibor Hlaváček, Ph.D.
- **Architecture of Motion**  
doc. Ing. arch. Dalibor Hlaváček, Ph.D.
- **Architecture of Sub-Saharan Africa**  
doc. Ing. arch. Dalibor Hlaváček, Ph.D.
- **Large Scale 3D Printing of Recycled Materials (Polymers, Concrete, Mycelium)**  
Doc. Ing arch. Kateřina Sýsová, Ph.D.
- **Recycled Material in Architecture and Design (Polymers, Glass, Paper)**  
Doc. Ing arch. Kateřina Sýsová, Ph.D.
- **Modern and Contemporary Architecture within the Frame of Nature**  
doc. PhDr. Jana Tichá, Ph.D.

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**Theme of Research**

**ARCHITECTURAL DASHBOARDING  
FOR THE DESIGN PROCESS USING DIGITAL TWINS**

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**Summary**

Throughout the design process, architects make their decisions based on the knowledge they have developed so far in the project. To enable a fluent process that does not interrupt the flow of the process, complex information needs to be clearly communicated. Part of the information comes from conventional and hybrid models using Digital Twin technology. Dashboarding is a UX approach that provides real-time summaries of ongoing processes. The goal of the research is to combine information streams in the design process in various comprehensive dashboard systems that will be tested during the design process.

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**Program**

Architecture and Urbanism

**Field of Study**

ATT / Architecture, Theory and Creation

**Form**

Full-time

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**Number / Department**

15116 / Department of Architectural Modelling

**Supervisor**

prof. Dr. ir. Henri Achten

**Supervisor Specialist**

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**Grant / Research Connection**

The project continues on ongoing PhD research on the use of DigitalTwins in the design process.

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**Connection with the Department's Priority** —

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**Theme of Research**

**VR TESTBED FOR INTERACTIVE ARCHITECTURE**

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**Summary**

Interactive architecture is made up of reactive parts that react to the environment and inhabitants. Creating physical mock-ups is expensive and limits the number of models that can be tested. Virtual Reality allows relatively cheap modelling of multiple future scenarios, that due to their realism and closeness of daily experience, can offer insights impossible to gain with numerical models and physical simulation. The purpose of this research is to set up the pipeline for VR-based assessment projects that can act as a Testbed for future scenarios of interactive architecture.

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**Program**

Architecture and Urbanism

**Field of Study**

ATT / Architecture, Theory and Creation

**Form**

Full-time

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**Number / Department**

15116 / Department of Architectural Modelling

**Supervisor**

prof. Dr. ir. Henri Achten

**Supervisor Specialist**

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**Grant / Research Connection**

Collaboration with Prof. VandeMoere from KU Leuven, will continue and collaboration with Dr. Davide Schaumann will be established, Director of the Intelligent Place Lab at Technion in Haifa.

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**Connection with the Department's Priority** —

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**Theme of Research**

**ADVANCED DIGITAL SKETCHING INCLUDING AI  
IN THE IDEATION PHASE**

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**Summary**

Digital sketching is enabled by hardware and software. This enables architects to ideate their concepts in completely new ways. How this influences the process is still not understood. The research builds a theoretical framework and tests various digital sketching approaches to determine the influence on this important stage in the design process.

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**Program**

Architecture and Urbanism

**Field of Study**

ATT / Architecture, Theory and Creation

**Form**

Full-time

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**Number / Department**

15116 / Department of Architectural Modelling

**Supervisor**

prof. Dr. ir. Henri Achten

**Supervisor Specialist**

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**Grant / Research Connection**

The project continues with earlier PhD projects by Kateřina Sýsová (Nováková) and Dalibor Dzurilla. Collaboration with Dr. Tomas Dorta (University of Montreal) and Dr. Hadas Sopher (Ariel University) will continue.

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**Connection with the Department's Priority** —

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**Theme of Research**

**THE IMPACT OF MAKER TECHNOLOGY  
IN DESIGN EDUCATION**

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**Summary**

Maker technology comprises a wide range of tools, instruments, and programs that enable rapid prototyping and reality capture. Although they are around for many years, the disruptive impact and potential of said technologies in design education has not received much attention. Design education puts strong emphasis on surveying, analysis, and prototyping – all of which are affected by Maker technologies. In this PhD research pedagogical theory is combined with design methodological approaches. The goal is to develop a framework combined with experimental setups to gauge the impact of Maker technology in design education.

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**Program**

Architektura a urbanismus

**Field of Study**

ATT / Architektura, teorie a tvorba

**Form**

kombinovaná

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**Number / Department**

15116 / Ústav modelového projektování

**Supervisor**

prof. Dr. ir. Henri Achten

**Supervisor Specialist**

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**Grant / Research Connection**

The project continues on earlier PhD projects by Katerina Sysova (Novakova) and Dalibor Dzurilla. We will continue collaboration with dr. Tomas Dorta (University of Montreal) and dr. Hadas Sopher (Ariel University).

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**Connection with the Department's Priority** —

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**Theme of Research**

**METHODS OF CREATING AND APPLYING A LANDSCAPE  
PLAN IN THE MINING AREAS OF THE ÚSTÍ REGION**

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**Summary**

The work follows on from the architectural agenda that was active in the region in the years 2018–2023 and which resulted in one of the pillars of the TransFormtion Centre of the Ústí Region. The goal of the work is to develop and prepare documents and solutions in various areas in the whole range of areas – landscape, settlement, energy, resocialization, transFormtion, shrinking region. All ongoing crises weigh on the already affected Ústí Region even more urgently. Part of the work is a connection to the ongoing publication activity.

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**Program**

Architecture and Urbanism

**Field of Study**

ATT / Architecture, Theory and Creation

**Form**

Full-time or combined

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**Number / Department**

15127 / Department of Architectural Design I

**Supervisor**

doc. Ing. arch. Ondřej Beneš, Ph.D.

**Supervisor Specialist**

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**Grant / Research Connection** —

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**Connection with the Department's Priority** —

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**Theme of Research**

**THE ISSUE OF THE WORK OF A CITY ARCHITECT**

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**Summary**

Municipal and municipal architects are gradually expanding in Bohemia. The aim of the work will be to describe experiences and problems from individual cities, to put them in the context of the region and to look for solutions to issues linked to the state of local governments and our legislation. Part of the work will be a connection to the publication activity making this issue generally understandable.

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**Program**

Architecture and Urbanism

**Field of Study**

ATT / Architecture, Theory and Creation

**Form**

Full-time or combined

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**Number / Department**

15127 / Department of Architectural Design I

**Supervisor**

doc. Ing. arch. Ondřej Beneš, Ph.D.

**Supervisor Specialist**

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**Grant / Research Connection**

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**Connection with the Department's Priority**

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**Theme of Research**

**MULTIFUNCTIONAL INSTITUTIONS  
IN THE CONTEXT OF THE CITY**

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**Summary**

The combination of the functions of cultural educational and civic institutions (halls, cinemas, libraries, galleries, community centres, etc.) is a trend in revitalising the urban fabric. The priority is the path to sustainability and efficiency of the institution. They include support for community and educational functions in relation to cultural functions, functional requirements at the scale of the room – multifunctional hall, acoustics, light, technology, functional requirements at the urban scale, efficiency of operation. The research will be conducted through qualitative and quantitative comparison of selected case studies. The outcome may be a methodology and strategy for the preparation of this type of buildings.

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**Program**

Architecture and Urbanism

**Field of Study**

ATT / Architecture, Theory and Creation

**Form**

Combined

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**Number / Department**

15118 / Department of Building Theory

**Supervisor**

doc. MgA. Ondřej Císler Ph.D.

**Supervisor Specialist**

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**Grant / Research Connection** —

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**Connection with the Department's Priority**

The theme of research corresponds to the basic priority of the Department 15118: Creation of the built environment in the scale of buildings according to the principles of sustainable development, namely research priority 3. Civil, production, transport buildings, i.e. buildings invested in by the public sector, in relation to the development and needs of society.

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**Theme of Research**

**DEVELOPMENT PROJECTS,  
THEIR ATTRIBUTES AND MANAGEMENT**

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**Summary**

The aim of the work will be to examine the relationship between city strategies, public policies and development projects or real-estate assets in the city. Emphasis will be placed on the interdisciplinary overlap of solutions to the given issue, which is still insufficiently promoted and practically applied in Czech Republic.

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**Program**

Architecture and Urbanism

**Field of Study**

ATT / Architecture, Theory and Creation

**Form**

Full-time nebo kombinovaná

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**Number / Department**

15118 / Department of Building Theory

**Supervisor**

Mgr. Lucia Dobrucká, Ph.D.

**Supervisor Specialist**

Ing. arch. Jaromír Hainc, Ph.D.

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**Grant / Research Connection**

Transforming the creation and content of higher education at CTU and NPO\_CVZT\_MSMT-16597/2022, CŽV Development, program Development

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**Connection with the Department's Priority**

No. 4/ Development and economics of buildings

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**Theme of Research**

**FEMALE URBAN EXPERIENCE  
IN COMPARATIVE PERSPECTIVE**

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**Summary**

As residents of the city, women face various restrictions that depend, among other things, on their class affiliation, property status or age. The dissertation should analyse the challenges faced by women in the urban environment and bring their historical and socioeconomic reasons in a comparative perspective. In addition, the dissertation should focus on gender-based aspects of urban planning and urban policies and develop suggestions for their improvement.

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**Program**

Architecture and Urbanism

**Field of Study**

ATT / Architecture, Theory and Creation

**Form**

Full-time or combined

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**Number / Department**

15113 / Department of Theory and History of Architecture

**Supervisor**

doc. Hubert Guzik, Ph.D.

**Supervisor Specialist**

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**Grant / Research Connection**

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**Connection with the Department's Priority**

History of Czech (modern) architecture

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**Theme of Research**

**SUSTAINABLE ENERGY SOURCES  
FROM THE PERSPECTIVE OF ARCHITECTURE**

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**Summary**

USustainability, and in particular renewable energy sources, of which the use of solar energy is an important part, has become a major technical and, more recently, political issue. There is no doubt that the future of buildings, or indeed entire cities, rests on new, renewable energy sources.

Since 2017, the Department of Architectural Design II has been involved in research on the application of photovoltaic systems in architecture within the Centre for Advanced Photovoltaics (CAP) in cooperation with the FEL CTU and UCEEB CTU. Since 2024, the Centre for Advanced Photovoltaics is part of the inter-university project OP JAK Energy Conversion and Storage.

The main focus of the research is Building-Integrated Photovoltaics (BIPV) and its potential in the design of sustainable architecture. The second area of research focuses on the possibilities and criteria for the use of PV systems in different types of urban environments.

The interested student should actively participate in the ongoing research on BIPV and its potential in the architecture of the future, and further develop the research on urban environments in relation to sustainable energy sources – what are their application possibilities, what is the interplay between the character of the territory, the architectural design of buildings, the social context, user habits and energy needs and ways to satisfy them; what is the role of the architect in the design of new energy-plus urban neighbourhoods and what tools to use for this (e.g. „cross mapping“ allowing simultaneous evaluation of the urban-architectural values of a neighbourhood and its photovoltaic potential, etc.).

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**Program**

Architecture and Urbanism

**Field of Study**

ATT / Architecture, Theory and Creation

**Form**

Full-time

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**Number / Department**

15128 / Department of Architectural Design II

**Supervisor**

doc. Ing. arch. Dalibor Hlaváček, Ph.D.

**Supervisor Specialist**

Ing. arch. Martin Čeněk, Ph.D.

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**Grant / Research Connection**

From 1/1/2025 working contract half-time (0.5) within the project OP JAK „Konverze a skladování energie (ECO&Stor)“, CZ.02.01.01/00/22\_008/0004617

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**Connection with the Department's Priority**

Department's research priority No. 1 – Sustainable architecture. The work is a continuation of the department's long-term activities in the field of „sustainable architecture“ and parallel ongoing research.



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**Theme of Research**

**ARCHITECTURE OF MOTION**

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**Summary**

Railways are the least polluting means of public transport and are gradually becoming the basis of national transport strategies and part of urban decarbonization solutions. The topic of the work will be the latest trends in the architecture of railway structures in the European environment. The research topic will be specified according to the focus of the applicant.

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**Program**

Architecture and Urbanism

**Field of Study**

ATT / Architecture, Theory and Creation

**Form**

Combined

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**Number / Department**

15128 / Department of Architectural Design II

**Supervisor**

doc. Ing. arch. Dalibor Hlaváček, Ph.D.

**Supervisor Specialist**

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**Grant / Research Connection**

From 1/1/2025 working contract half-time (0.5) within the project OP JAK „Konverze a skladování energie (ECO&Stor)“, CZ.02.01.01/00/22\_008/00046

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**Connection with the Department's Priority**

Research priority No. 1 of the department – Sustainable architecture. The work is a continuation of the long-term activities of the Department in the field of „sustainable architecture“, concurrently ongoing research and work of the supervisor in the field of transport constructions.

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**Theme of Research**

**ARCHITECTURE OF SUB-SAHARAN AFRICA**

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**Summary**

African architecture is exceptionally diverse and has been influenced by foreign cultures for centuries. The traditional architecture is characterized by the use of local materials and passive principles of indoor environment control. The research topic will be the connection of traditional and modern architecture of sub-Saharan Africa with an emphasis on sustainable construction.

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**Program**

Architecture and Urbanism

**Field of Study**

ATT / Architecture, Theory and Creation

**Form**

Full-time

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**Number / Department**

15128 / Department of Architectural Design II

**Supervisor**

doc. Ing. arch. Dalibor Hlaváček, Ph.D.

**Supervisor Specialist**

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**Grant / Research Connection**

From 1/1/2025 working contract half-time (0.5) within the project OP JAK „Konverze a skladování energie (ECO&Stor)“, CZ.02.01.01/00/22\_008/0004617

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**Connection with the Department's Priority**

The department's research priority No. 1 – Sustainable architecture. The work is a continuation of the department's long-term activities in the field of „sustainable architecture“ and parallel ongoing research.

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**Theme of Research**                      **LARGE SCALE 3D PRINTING OF RECYCLED MATERIALS  
(POLYMERS, CONCRETE, MYCELIUM)**

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**Summary**                                      The research will be focused on large scale 3D printing of polymers and their use in architecture and design. The existing segments will be analysed and re-tested. New design and architectural segments will be welcomed.

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**Program**                                      Architecture and Urbanism  
**Field of Study**                              ATT / Architecture, Theory and Creation  
**Form**    Full-time or combined

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**Number / Department**                      15116 / Department of Architectural Modelling  
**Supervisor**                                      Doc. Ing. arch. Kateřina Sýsová, Ph.D.  
**Supervisor Specialist**                      Ing. arch. Jiří Vele

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**Grant / Research Connection**      TACR FW09020011

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**Connection with the Department's Priority**      —

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**Theme of Research**                      **RECYCLED MATERIAL IN ARCHITECTURE AND DESIGN  
(POLYMERS, GLASS, PAPER)**

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**Summary**                                      The research will participate in TACR FW 09020011.  
Components from recycled materials will be designed.

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**Program**                                      Architecture and Urbanism  
**Field of Study**                              ATT / Architecture, Theory and Creation  
**Form**    Full-time

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**Number / Department**                      15116 / Department of Architectural Modelling  
**Supervisor**                                      Doc. Ing. arch. Kateřina Sýsová, Ph.D.  
**Supervisor Specialist**                      —

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**Grant / Research Connection**      TACR FW09020011

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**Connection with the Department's Priority**      —

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**Theme of Research**

**MODERN AND CONTEMPORARY ARCHITECTURE  
WITHIN THE FRAME OF NATURE**

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**Summary**

The present environmental crisis poses new challenges to architecture as situated within the frame of nature. The research will be focused on values in modern and contemporary architecture, its theory and practice. More specifically, the research will address the so-called soft strategies of sustainability related to changes in lifestyle.

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**Program**

Architecture and Urbanism

**Field of Study**

ATT / Architecture, Theory and Creation

**Form**

full-time

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**Number / Department**

15113 / Department of Theory and History of Architecture

**Supervisor**

doc. PhDr. Jana Tichá, Ph.D.

**Supervisor Specialist**

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**Grant / Research Connection**

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**Connection with the Department's Priority**

Theory and interpretation of modern  
and contemporary architecture

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**Program**

# ARCHITECTURE AND URBANISM

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**Field of Study**

# HISTORY OF ARCHITECTURE AND MONUMENT CONSERVATION

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**Theme of Research**

- **Architecture in the Perspective of Feminist Theories**  
Ing. arch. Mgr. et Mgr. Klára Brůhová, Ph.D.
- **The Origins of the Renaissance in Central Europe**  
prof. PhDr. Pavel Kalina, Ph.D.
- **“Dynamic Baroque” in Italy and in Central Europe**  
prof. PhDr. Pavel Kalina, Ph.D.
- **Renaissance Revival Architecture  
as a Global and Regional Phenomenon**  
prof. PhDr. Pavel Kalina, Ph.D.ř
- **The Legacy of Medieval Architecture in Baroque and in the 19th Century**  
prof. PhDr. Pavel Kalina, Ph.D.
- **The Architecture of World Expositions in the 19th Century**  
prof. PhDr. Pavel Kalina, Ph.D.

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**Theme of Research**

**ARCHITECTURE IN THE PERSPECTIVE  
OF FEMINIST THEORIES**

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**Summary**

The topic „Architecture in the Perspective of Feminist Theories“ is deliberately broad, as it is assumed that a more detailed specification of the focus and methodology would be done in collaboration with the candidate. The doctoral thesis may address specific conditions of women in architecture, it may take the form of a monographic research of a particular woman-architect, institution, or office, or focus on answering more theoretical questions related to, for example, critical reflection of the canon of architectural history, the topic of collaboration within architectural practice, etc. In terms of time, the research should focus on the 20th century or part of it. If the topic is narrowed down to the situation of women architects after the WWII, the doctoral research can be linked to the current NAKI 2023–2027 project: Stavoprojekt 1948–1953. Collectivization of architectural designing and its imprint in the memory of Czech landscape and cities.

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**Program**

Architecture and Urbanism

**Field of Study**

DAPP / History of Architecture and Monument Conservation

**Form of Study**

Full-time or combined

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**Number / Department**

15113 / Department of Theory and History of Architecture

**Supervisor**

Ing. arch. Mgr. et Mgr. Klára Brůhová, Ph.D.

**Supervisor Specialist**

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**Grant / Research Connection**

NAKI 2023–2027 DH23P030VV004:  
Stavoprojekt 1948–1953. Kolektivizace projekční činnosti  
a její otisk v paměti české krajiny a měst.

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**Connection with the Department's Priority**

History of Czech (modern) architecture

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**Theme of Research**                      **THE ORIGINS OF RENAISSANCE IN CENTRAL EUROPE**

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**Summary**                                      The research may be focused on one region (e.g., Bohemia) or more generally on the beginnings of the Renaissance in a wider Central European context. The research may be focused either on Forml changes in the language of architecture, or on their social context.

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**Program**                                      Architecture and Urbanism  
**Field of Study**                              DAPP / History of Architecture and Monument Conservation  
**Form**    Full-time or combined

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**Number / Department**                      15113 / Department of Theory and History of Architecture  
**Supervisor**                                      prof. PhDr. Pavel Kalina, Ph.D.  
**Supervisor Specialist**                      —

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**Grant / Research Connection**                      —

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**Connection with the Department's Priority**                      In-depth historical studies of Czech architecture

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**Theme of Research**                      **"DYNAMIC BAROQUE" IN ITALY AND IN CENTRAL EUROPE**

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**Summary**                                      The research will be focused on the changes in the language of architecture in 17th-century Italy and their transformation in Central Europe. The project can be either focus on one region (Bohemia) or on the wider area of Central Europe. It should include both formal aspects of architecture and its social context. The project can be realized as a monograph of one architect.

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**Program**                                      Architektura a urbanismus  
**Field of Study**                              DAPP / History of Architecture and Monument Conservation  
**Form**    Full-time or combined

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**Number / Department**                      15113 / Ústav teorie a dějin architektury  
**Supervisor**                                      prof. PhDr. Pavel Kalina, Ph.D.  
**Supervisor Specialist**                      —

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**Grant / Research Connection**              —

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**Connection with the Department's Priority**      In-depth historical studies of Czech architecture

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**Theme of Research**

**RENAISSANCE REVIVAL ARCHITECTURE  
AS A GLOBAL AND REGIONAL PHENOMENON**

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**Summary**

The research will be focused on the changes in the language of 19th-century architecture in relationship to the discovery of 16th-century Renaissance as a matrix of modern architecture. The project can be either focused on one region (Bohemia) or on the wider area of Europe. It should include both FormI aspects of architecture and its social context. The project can be realized as a monograph of one architect.

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**Program**

Architecture and Urbanism

**Field of Study**

DAPP / History of Architecture and Monument Conservation

**Form**

Full-time or combined

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**Number / Department**

15113 / Department of Theory and History of Architecture

**Supervisor**

prof. PhDr. Pavel Kalina, Ph.D.

**Supervisor Specialist**

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**Grant / Research Connection**

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**Connection with the Department's Priority**

In-depth historical studies of Czech architecture

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**Theme of Research**

**THE LEGACY OF MEDIEVAL ARCHITECTURE  
IN BAROQUE AND IN THE 19TH CENTURY**

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**Summary**

The research will be focused on the changes of medieval legacy in baroque era and in the 19th-century architecture. The project can be either focused on one region (Bohemia) or on the wider area of Central Europe. It should include both Forml aspects of architecture and its social context. The project can be realized as a monograph of one architect.

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**Program**

Architecture and Urbanism

**Field of Study**

DAPP / History of Architecture and Monument Conservation

**Form**

Full-time or combined

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**Number / Department**

15113 / Department of Theory and History of Architecture

**Supervisor**

prof. PhDr. Pavel Kalina, Ph.D.

**Supervisor Specialist**

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**Grant / Research Connection** —

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**Connection with the Department's Priority**

In-depth historical studies of Czech architecture

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**Theme of Research**

**THE ARCHITECTURE OF WORLD EXPOSITIONS  
IN THE 19TH CENTURY**

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**Summary**

The research will be focused on architecture of World fairs and of similar actions organized at regional level. The research will include not only the architecture itself, e. g., its typology and constructions, but also its media image and wider social contexts.

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**Program**

Architecture and Urbanism

**Field of Study**

DAPP / History of Architecture and Monument Conservation

**Form**

Full-time or combined

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**Number / Department**

15113 / Department of Theory and History of Architecture

**Supervisor**

prof. PhDr. Pavel Kalina, Ph.D.

**Supervisor Specialist**

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**Grant / Research Connection**

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**Connection with the Department's Priority**

In-depth historical studies of Czech architecture

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**Program**

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# ARCHITECTURE AND URBANISM

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**Field of Study**

# LANDSCAPE ARCHITECTURE

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**Theme of Research**

→ **Green Infrastructure in Metropolitan Areas**  
RNDr. PhDr. Markéta Šantrůčková, Ph.D.

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**Theme of Research**

**GREEN INFRASTRUCTURE IN METROPOLITAN AREAS**

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**Summary**

Analysis of the green infrastructure in a big city, the analysis will be focused on the land cover changes, connectivity, and functional use of the areas of green infrastructure. Ecosystem functions will be assessed as well. The analysis of the areas of green infrastructure will be basis for optimalization of green infrastructure network that fulfils several ecosystem functions and helps t adapt cities to the climate change.

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**Program**

Architecture and Urbanism

**Field of Study**

KA / Landscape Architecture

**Form**

Full-time and combined

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**Number / Department**

15120 / Department of Landscape Architecture

**Supervisor**

RNDr. PhDr. Markéta Šantrůčková, Ph.D.

**Supervisor Specialist**

Ing. Romana Michalková, Ph.D.

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**Grant / Research Connection**

DAAD Landscape architecture as a mediator between cultural building traditions and future climate adaptation measures

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**Connection with the Department's Priority** —

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**Program**

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# **ARCHITECTURE AND URBANISM**

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**Field of Study**

# **URBAN DESIGN AND SPATIAL PLANNING**

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**Theme of Research**

→ **Traffic Generation Factors**

Doc. Ing. arch. Veronika Šindlerová, Ph.D.

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**Theme of Research**

**TRAFFIC GENERATION FACTORS**

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**Summary**

Subject of the scientific research: research of current trends of the traffic generated by different types of land use, with an accent to investigate the conditionality of the volume of traffic generated and the division of transport work by the layout of the territory, the structure of the built-up environment and the mutual relationship between sources and destinations of traffic in the territory and the traffic behaviour of different users of the territory. Emphasis will be placed on the investigation of traffic generated by dynamically developing land use and activities in the area, such as typically city logistics, e-commerce, concentrated areas of workplaces, recreational use of land, etc. Remarks: publication of results and dissertation in English, the applicant must contact the supervisor at least one week before the deadline for submission of the application and agree on details.

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**Program**

Architecture and Urbanism

**Field of Study**

UUP / Urban Design and Spatial Planning

**Form**

Full-time

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**Number / Department**

15121 / Department of Spatial Planning

**Supervisor**

Doc. Ing. arch. Veronika Šindlerová, Ph.D.

**Supervisor Specialist**

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**Grant / Research Connection**

TA ČR Doprava 2030: Inovativní metody stanovení intenzity dopravy generované územím. Planned research, expected submission of the project proposal in spring 2024.

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**Connection with the Department's Priority**

P1/ Sustainable territorial development: regeneration of urbanized territories, city of short distances, availability of public infrastructure, economically, ecologically, and socially sustainable use of territory  
P6/ Sustainable mobility and settlement structures

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**Program**

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# SMART CITIES

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**Theme of Research**

- **Economic Evaluation of Public Goods Using Hedonic Price Methods**  
doc. Ing. arch. Jakub Vorel, Ph.D.
- **Sustainable Urban Mobility and Accessibility**  
doc. Ing. arch. Jakub Vorel, Ph.D.
- **The Influence of the City Structure on Pedestrian Movement**  
doc. Ing. arch. Jana Zdráhalová, Ph.D.
- **The Relationship of Spatial and Social Aspects of the City**  
doc. Ing. arch. Jana Zdráhalová, Ph.D.

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**Theme of Research**

**ECONOMIC EVALUATION OF PUBLIC GOODS  
USING HEDONIC PRICE METHODS**

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**Summary**

Research activity: estimating the value of public goods and especially public infrastructure based on its price effects on traded real estate. Methodological approaches: spatial regression analysis and other machine learning methods, the use and development of the val4plan tool. Applicant requirements: basic knowledge of statistical methods, machine learning methods, programming language R and possibly Python and interest in further improving these skills and knowledge. Expected results:  
First year: publication of a „review article“ in a peer-reviewed journal, Second year: submission of an article to the review process in an journal with impact factor (Jimp result type), Third year: accepted article in journal with impact factor (Jimp result type), publication results and dissertation in English. Active involvement in scientific research projects and participation on the development of the val4plan tool. In the study application, the applicant encloses a letter of motivation, which will describe the fulfilment of the above-mentioned requirements, and at least one week before the final application deadline, applicant contacts the supervisor and discusses possible cooperation with him.

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**Program**

Smart Cities

**Form**

Full-time

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**Number / Department**

15121 / Department of Spatial Planning

**Supervisor**

doc. Ing. arch. Jakub Vorel, Ph.D.

**Supervisor Specialist**

prof. Ing. Ondřej Příbyl, Ph.D.

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**Grant / Research Connection**

TL03000695: Modely oceňování veřejných statků pro účely prostorového plánování, main researcher, 2020–2023, Involvement of a doctoral student in the application of project results according to the sustainability plan. Intention to apply for GAČR, TAČR grants with the intention of involving a doctoral student in project solutions

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**Connection with the Department's Priority**

P3/ Innovation of tools for planning and management of territory

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**Theme of Research**

**SUSTAINABLE URBAN MOBILITY AND ACCESSIBILITY**

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**Summary**

Research activity: investigation of the relationship between transport mobility and land use in urban regions; investigating the effectiveness of infrastructure development, administrative-regulatory measures, and economic measures to achieve sustainable mobility and accessibility in urban regions. Methodological approaches: statistical analysis, machine learning, simulation modelling, use of the agent-based model MATSim. Applicant requirements: basic knowledge of statistical methods, machine learning methods and computer simulation methods, programming languages JAVA, Python and R and interest in further improving these skills and knowledge. Expected results:

First year: publication of a „review article“ in a peer-reviewed journal,  
Second year: submission of an article to the review process in journal with an impact factor (Jimp result type),  
Third year: an accepted article in a journal with an impact factor (Jimp result type). Publication of results and dissertation in English. Active involvement in scientific research projects. In the study application, the applicant encloses a letter of motivation, which will describe the fulfilment of the above-mentioned requirements, and at least one week before the final application deadline, applicant contacts the supervisor and discusses possible cooperation with him.

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**Program**

Smart Cities

**Form**

Full-time

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**Number / Department**

15121 / Department of Spatial Planning

**Supervisor**

doc. Ing. arch. Jakub Vorel, Ph.D.

**Supervisor Specialist**

prof. Ing. Ondřej Přibyl, Ph.D.

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**Grant / Research Connection**

EF17\_048/0007435: Smart City – Smart Region – Smart Community, aplikace modelu MATSim pro simulaci dopravních opatření v ORP Ústí nad Labem, co-researcher, 2018–2023, Successfully submitted project application OP JAK Mezisektorová spolupráce: Udržitelná mobilita 2030+. If the project is approved, the doctoral student will be involved in its team.

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**Connection with the Department's Priority**

P6/ Sustainable mobility and settlement structures

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**Theme of Research**

**THE INFLUENCE OF THE CITY STRUCTURE  
ON PEDESTRIAN MOVEMENT**

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**Summary**

The structure of the city, the organization of the road network, the layout of the plots and individual buildings create a prerequisite for the chosen mobility of people. The research examines the influence of the structure of the city on the pedestrian movement of people.

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**Program**

Smart Cities

**Form**

Full-time

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**Number / Department**

15119 / Department of Urban Design

**Supervisor**

doc. Ing. arch. Jana Zdráhalová, Ph.D.

**Supervisor Specialist**

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**Grant / Research Connection**

The topic is linked to the Horizon SUPERHERO grant, which will be attended to by the Department of Urbanism.

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**Connection with the Department's Priority**

3/Relationship between psycho-social  
and urban environment

5/ Regeneration and revitalization of the settlement

6/ Public space and its real use

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**Theme of Research**

**RELATIONSHIP BETWEEN SPATIAL  
AND SOCIAL ASPECTS OF THE CITY**

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**Summary**

The connection between the spatial parameters of a city and the social life of its inhabitants is a widely researched topic. The issue can be targeted according to the interest of the candidate. Doctoral students are already working on the relationship between the structure of the city and the distribution of services, and the structure of the city and social segregation.

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**Program**

Smart Cities

**Form**

Full-time

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**Number / Department**

15119 / Department of Urban Design

**Supervisor**

doc. Ing. arch. Jana Zdráhalová, Ph.D.

**Supervisor Specialist**

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**Grant / Research Connection**

The topic is linked to the Horizon SUPERHERO grant, which will be attended to by the Department of Urbanism.

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**Connection with the Department's Priority**

3/Relationship between psycho-social  
and urban environment

5/ Regeneration and revitalization of the settlement

6/ Public space and its real use

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