

PROGRAMME ARCHITECTURE AND URBANISM:

STUDY FIELDS: ATT / Architecture – Theory and Design, AST / Architecture, Building and Technology, DAPP / History of Architecture and Monument Conservation, UUP / Urban Design and Spatial Planning



PROGRAMME DESIGN:

STUDY FIELD: PD / Industrial Design

	Research Theme	Department	Form	Tutor(s)	Study Field	Summary	Connection to ongoing grant / GAČR, TAČR, NAKI, etc.	Connection to priority, cooperation, future research
1	Interactive Architecture	15116	full-time	prof. Dr. ir. Henri Hubertus Achten	ATT	Sensor technology, material research, cloud computing, social networks, actuators, and advanced in climate and building control lead to an increasing application of techniques to make buildings react in more various and flexible ways to the inhabitant. These developments are not investigated critically from the architectural point of view. In this research project, we collaborate with the Research x Design group of Professor Andrew Vande Moere of KU Leuven. Research goals are: (i) development of theoretical framework of interactive architecture, (ii) prototyping of interactive case studies (using robotic technologies, sensors, and programming), (iii) experiments and assessment of prototypes with people, (iv) feedback of results to theoretical framework. Results will be presented in scientific conferences and journals.	CELSA/18/020: Purposefully Controlling Mediated Architecture	Earlier PhD research on interactive architecture: Abramovic (Artificial Life Approach to Interactive Architecture) and Kateřina Kašpar Goryczka (IA-Stijl).
2	Teorie města a jejich aplikace / Urban theories and reality	15119	full-time	doc. Ing. arch. Irena Fialová	UUP	Postmodernism has brought many new theories into urbanism, which, according to recent research, can be divided into three main directions - morphological, phenomenological and network theories. The research aims to compare current major European urban realised projects with these theories and to consider their contribution to practice.	GAČR 17-069155 / <i>Ekologicky šetrné tendence v československém urbanismu a územním plánování</i>	1. Tasks of contemporary urbanism, 2. Relationship between social and urban environment, 4. Typology of urban design, 6. Public space in relation to its real use. 8. Regeneration and revitalization of living spaces.
3	Obytné prostředí a doprava / Living environment and transport	15119	full-time	doc. Ing. arch. Irena Fialová	UUP	Automotive transport is and has been a major factor influencing urban planning for more than 100 years. Significantly and insensitively, it changed the structure of our cities and disturbed the habitability, permeability and legibility of the public space. The research aims at mapping, naming and understanding the impact of transport planning on the quality of public space in the vicinity of major transport structures inside the city (underpasses, overpasses, estacades, tunnel entrances, noise walls, hygienic strips of greenery etc.) and at comparing foreign examples of best practice solutions with Czech solutions, experience and possibilities with the aim of helping the modernist 20th century city turn into a sustainable 21st century city.	GAČR 17-069155 / <i>Ekologicky šetrné tendence v československém urbanismu a územním plánování</i>	1. The tasks of contemporary urbanism, 2. The relationship between social and urban environment, 6. Public space in relation to its real use 7. City infrastructure 8. Regeneration and revitalization of living spaces 10. Urban models.
4	Využití počítačových simulací a "velkých dat" pro experimentální výzkum urbánního prostředí. (Application of computer simulations and "big data" for experimental research of the urban environment.)	15121		doc. Ing. arch. Jakub Vorel, Ph.D.	UUP	New computer technology and digital data offer tremendous opportunities for experimental research of cities, particularly in areas where such research cannot be done in a real environment. The proposed topic focuses on the use of these new opportunities for the theoretical research and practice of spatial planning.		Cooperation within the doctoral program Smart Cities
5	Application of the theory of complex systems on the study of the urban systems.	15121		doc. Ing. arch. Jakub Vorel, Ph.D.	UUP	The theory of complex systems conceives the urban system as an ecosystem evolving to some extent spontaneously "bottom-up" by everyday activities of individual actors who are acting within the given physical, economic and institutional constraints. The operationalization of the theory of complex systems via a cellular automata models and agent-based models allows to study the motives and decision-making of actors in their local contexts and the resulting aggregated effects on the level of urban systems and by that to better comprehend the dynamic relations between micro and macro-level.		Cooperation within the doctoral program Smart Cities
6	Historical load-bearing structures, materials and technologies	15122	full-time	Pospišil	AST	Load-bearing structures, materials and technologies in the history of architecture from various points of view. (Eg.: Historical processes in creating load-bearing structures. Materials in historic load-bearing structures. Failures of historic load-bearing structures. Diagnostics of historic load-bearing structures. New materials for renovation of historical load-bearing structures.)	Grant NAKI DG16P02M050 "Optimalizace sledování a hodnocení informací o památkových stavbách" and Grant NAKI DG18P020VV033 "Metody pro zajištění udržitelnosti ocelových mostních konstrukcí industriálního kulturního dědictví".	Connection to priority of Load-bearing structures department - historical load-bearing structures