Subject description

Faculty of Architecture, WUT 2020, **Architecture** studies

Architecture for Society of Knowledge speciality

EXPERIMENTAL DESIGN II		ASK2-P-Ex2	MSc level	semester 2
Classes: **project**	Hours/semester **90**	Student's own workload hours: **92**	Status: **obligatory** Level: **advanced**	ECTS: **8**
				Exam: **no**

Unit delivering this subject: Katedra Projektowania Architektonicznego

Pracownia Projektowania Architektonicznego Wspomaganego Komputerem

Subject coordinator: prof. dr inż. arch. Jan Słyk

Learning outcomes and subject delivery methods

Objective of the course:

The project is aimed at creating an alternative to traditional architectural studies of problem-solving methodologies. It takes place not through analysis and theoretical conceptual considerations but through the design laboratory and the experiments conducted in it. As in the area of natural sciences, the experiment runs in the sequence: assumptions, apparatus construction, observation + measurement, conclusions.
The implementation of the experiment uses digital fabrication equipment, detectors, signal emitters and process control computers.

General description of the course:

The goal of the project is designing a process that influences the conditions of use or sensual reception, allowing to shape the extended space by using of digital tools.
Students participate in activities related to architecture of information, where the design activities become not a spatial object but a process (creation, use, destruction). Thanks to this, user can shape the final form of space, which arises as a result of the architect's instructions (program), user's wishes and the impact of the conditions of use (parametric modifying factors)
The design method taught during the classes is the integration of design and programming. Architectural tools (Grasshopper) and independent development environments (Processing) serve this purpose.

Skilled competences:

- Typologization and valorization of project tasks
- Shaping design methods and separating specialized tasks
- Programming
- Algorithmization of spatial tasks
- Shaping the methods of evaluating the results of the experiment
- Creating interaction conditions with the user

Learning outcomes:

No. of the outcome/ area	Description
Knowledge	
W_01	Student has detailed theoretical knowledge of the theory of architecture and urban planning, useful for formulating and solving complex tasks in the field of architectural

	urban and spatial planning.
W_02	Student has extensive knowledge of architecture and urban planning, useful for designing architectural objects and urban complexes
W_03	Student knows the basic principles, constructions and building materials used in solving complex engineering tasks in the field of architectural and urban design.
Skills	
U_01	Student can acquire information from literature, databases and other properly selected sources. Student is able to integrate the obtained information, make their interpretation and critical assessment, as well as draw conclusions and fully substantiate opinions.
U_02	Student communicates using various techniques in a professional environment and delivers collected information in the form of a podcast.
U_03	Student is able to perform architectural and building documentation of complex systems and building elements at appropriate scales in relation to the conceptual architectural design.
U_04	Student integrates knowledge of various fields of science, including engineering problems, architectural history, art history, sociology, spatial planning and others, and apply a systemic approach; also taking into account non-technical aspects.
Social competences	
KS_01	Student is aware of the importance and understands the non-technical aspects and effects of engineering activities, including its impact on the natural and cultural environment and the related responsibility for decisions
KS_02	Student acts and thinks in a creative way.
2ASK_EX2_K 03	Student effectively uses imagination, intuition, creative attitude and independent thinking in order to solve problems within an experimental project; in particular using information and parametric techniques, as well as meeting the conditions related to public speeches or presentations

Learning contents:

The substantive content (design task) changes in the following years, constituting a background for the training of the competencies described above.

exemplary project concerns construction of a pavilion that allows conducting experiments on a 1: 1 scale. The wooden-boards cuboid becomes the basis for shaping the interior with a form sculpted by a potential activities (time-lapse photography). Obtained shape is processed in modeller and then cut into sections and prepared to fabrication (numerically controlled machine from the foamed polystyrene).

The interior is used to collect optical signals (shadow shape) and process them into acoustic signals. The whole process of action is the target of education - students develop behaviours and "tune" the apparatus for action. Conclusions collected during the use of the pavilion provide material for subsequent space planning/programming.

Teaching methods and forms :

Project -laboratory, obligatory;
Implemented in a block system - two-week continuous work excluding other activities.
a parallel e-learning platform that is a data repository and a communication tool;
Task teamwork
Laboratory - shaping the experimental context
Individual work with sources, analysis, presentation;
Work in the areas of many disciplines: design, programming, continuous registration and publication of results, composition of musical components, production and assembly of elements;
Group discussions
Evaluation by lecturer(s), peer evaluation, assessment of reviewers

Method of testing the learning outcomes:

Outcome Number	**Way of testing**
Knowledge	

W_01	Project / experiment: daily presentations, defense in the group discussion and among external reviewers, pavilion utility tests at the exhibition, guest reviews, video presentation published on the web, essay publication, activity assessment algorithms (as part of the e-learning platform), assessment of the lecturers based on notes on the activity in individual, group and interpersonal work.
W_02	As above.
W_03	As above.
Skills	
U_01	As above.
U_02	As above.
U_03	As above.
U_04	As above.
Social competences	
KS_01	As above.
KS_02	As above.

Literature
Basic:
- Alexander, Christopher. "Notes on the Synthesis of Form", Harvard 1964.
- Bateson, Gregory. „Steps to an ecology of mind" Chicago, 1972.
- Cook, Peter „Archigram" Princeton Architectural Press, 1999.
- Cook, Peter „Experimental Architecture" London, 1970.
- Gibson, James Jerome. "The perception of the visual world" Mifflin, 1950.
- Holland, John H. „Adaptation in Natural and Artificial Systems" Boston: MIT Press, 1992.
- Iwamoto, Lisa. "Digital Fabrications. Architectural and Material Techniques" New York, 2009.
- Kolarevic, Branko. Maklavi A. M. „Performative Architecture – Beyond Instrumentality" New York, 2005.
- Leach, Neil. "Rethinking Architecture" London, 1997.
- Mandelbrot Benoît. B. "The fractal geometry of nature" San Francisco, 1982.
- Mitchell, William J. "City of bits: space, place and the Infobahn" MIT Press, 1996.
- Mitchell, William J. "Me++. The Cyborg Self and Networked City" MIT Press, 2004.
- Mitchell, William J. "Placing Words. Symbols Space and the City" MIT Press, 2005.
- Norberg-Schulz, Christian. „Intensions in Architecture" MIT Press, 1968.
- Saggio, Antonino. „The IT Revolution in Architecture. Thoughts on a paradigm shift" New York, 2010.
- Sakamoto, Tomoko (red), i in. "Verb Natures" Actar's boogazine vol.5, Barcelona, 2006.