



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Design and Research Workshop 1B [S2Arch2E>PPB1B]

Course

Field of study

Architecture

Year/Semester

1/2

Area of study (specialization)

–

Profile of study

general academic

Level of study

second-cycle

Course offered in

English

Form of study

full-time

Requirements

elective

Number of hours

Lecture

0

Laboratory classes

0

Other

0

Tutorials

0

Projects/seminars

0

Number of credit points

5,00

Coordinators

dr hab. inż. arch. Agata Gawlak prof. PP
agata.gawlak@put.poznan.pl

dr inż. arch. Barbara Świt-Jankowska
barbara.swit-jankowska@put.poznan.pl

Lecturers

Prerequisites

- the student has structured, theoretically based general knowledge covering key issues in architectural and urban design - the student has structured, theoretically based general knowledge covering key issues in the history of universal and Polish architecture, the history of urban planning and the history of contemporary architecture - the student has basic knowledge of contemporary development trends in the field of architectural and urban design - the student knows the basic methods, techniques, tools and materials used by architects in their work - the student knows and understands the basic concepts and principles of copyright law and the need to manage intellectual property resources - the student has the knowledge necessary to understand the social, economic, legal and other non- technical conditions of an architect's activity, and to take them into account in the practice of an architect - the student is able to obtain information from literature, databases and other, properly selected sources, also in English, is able to integrate information, interpret it, as well as draw conclusions and formulate and justify opinions - the student is able to communicate using various techniques in a professional environment and in other environments, also in English - the student is able to prepare and present a presentation oral, concerning specific issues using specialist vocabulary from the field of architecture and urban planning, construction,

functional conditions and forms - the student understands the need for lifelong learning, is able to inspire and organize the learning process of others - the student is able to cooperate and work in a group, assuming different roles in it - the student is able to think and act in a creative and enterprising way

Course objective

The primary goal is to engage students in scientific and implementation projects carried out at the Faculty. Students in the final year of second-cycle studies have the opportunity to choose a lab whose subject best suits their interests and to familiarize themselves with the methodology of scientific research, with various methods and research tools. The lab provides the opportunity to prepare for doctoral studies and enables students to acquire the skills of conducting research. The key partial objectives: • Acquiring knowledge and skills in analyzing the state of research based on a literature review and identifying research gaps, • Practicing the collection of research material, its analysis and verification, as well as selecting appropriate research methods and tools, • Solving planning and design problems using scientific methods, • Preparing and presenting the scope and results of research in the form of a structured scientific presentation (15 minutes). The discussion following the presentation aims to highlight both the shortcomings and strengths of the work.

Course-related learning outcomes

Knowledge:

Knows and understands advanced analysis methods, tools, techniques and materials necessary to prepare design concepts in an interdisciplinary environment, with particular emphasis on interdisciplinary cooperation and the integration of research results with the design process and their application in architectural and urban practice;

Knows and understands the interdisciplinary nature of architectural and urban design, including the need to integrate knowledge from various fields (e.g. social, technical, environmental sciences) and its application in design and scientific research in cooperation with specialists.

Skills:

Is able to critically analyze the state of research in a selected research topic, including the assessment of scientific achievements, identification of research gaps and formulation of conclusions regarding further research directions and their application in architectural or urban design.

Is able to assess the usefulness of advanced research methods and tools for solving scientific and design problems and select and apply appropriate methods of data analysis and interpretation in the design process.

Is able to think creatively and critically when designing and implementing scientific research, taking into account interdisciplinary conditions, as well as formulate and test new research hypotheses, the results of which may influence design solutions.

Is able to integrate information from various sources (scientific literature, empirical data, research results), interpret them and conduct a detailed critical analysis in the context of the problem being studied and its impact on design decisions.

Is able to communicate using various techniques and tools in a scientific and interdisciplinary environment, including preparing and presenting research results in the form of a structured scientific presentation and conducting a scientific discussion on both research and design solutions resulting from the research.

Is able to work individually and in a team to carry out scientific and design research, including collaborating with other specialists, sharing knowledge and taking a leading role in selected aspects of the research and design process.

Is able to estimate the time needed to complete both the research process and the development of an architectural or urban design based on research results and manage the project work schedule.

Is able to formulate new research ideas, conduct experimental analyses, test innovative solutions and verify their validity in the context of a selected research problem and their implementation in design.

Is able to implement the principles of scientific integrity and methodological guidelines in conducting research in the field of architectural, urban and spatial design, taking into account current standards and good research practices, as well as adapt research results to real design needs.

Social competences:

Is capable of effectively use imagination, intuition, creative attitude and independent thinking, to take responsibility for design and research decisions, taking into account their social, environmental and

spatial consequences, as well as to take care of the protection of the natural and cultural environment; Is capable of effectively cooperate in interdisciplinary teams, communicate with specialists from various fields and share knowledge and research results, as well as use modern information technologies and digital tools;

Is capable of make public appearances and present research and project results, including clear and precise transfer of information in the academic and professional environment;

Is capable of demonstrate ethical and social awareness in the research and design activities undertaken, including adherence to the principles of scientific integrity and professional responsibility, as well as actively participate in shaping the natural environment and cultural landscape by making conscious design decisions.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

The final grade is calculated as a weighted average of partial assessments based on the following criteria:

1. Active participation in classes (10%)

- confirmed by attendance at no less than 2/3 of the scheduled sessions. More than three unexcused absences may result in a reduction of the final grade by 0.5 to 1.0.

2. Assessment of reliability and responsibility in completing assigned tasks within the research-design group (20%)

- reflects social competences, teamwork skills, and the ability to assume responsibility for shared activities.

3. Assessment of the semester research report - both textual and graphic components (40%)

- evaluates content quality, accuracy, consistency with project goals, and the ability to synthesize and present results.

4. Assessment of individual engagement and substantive contribution to the group's research process (10%)

- formative assessment based on observed involvement and the quality of participation in collaborative tasks.

5. Quality of presentation of research results in the group setting (15%)

- assesses communication skills, clarity of argumentation, coherence of message, and the visual presentation of findings.

The final grade is calculated as the weighted average of the above components.

Grading scale: 2.0; 3.0; 3.5; 4.0; 4.5; 5.0

Grade 2.0 (inadequate)

Design and research papers that are incomplete or incomprehensible, do not effectively present the essence of the issue being studied, nor do they demonstrate conscious application of scientific and design methodology. Lack of logical argumentation, critical analysis, and reference to theory.

Grade 3.0 (sufficient)

Design and research papers that are correct, but at a minimal substantive level. They contain a proposal to solve the issue being studied, but in a superficial manner, with limited analysis, and insufficient reference to scientific literature and the research process.

Grade 3.5 (sufficient plus)

Design and research papers that are correct, presenting a proposal to solve the issue together with a basic explanation of the process of arriving at the results. They demonstrate minimal reference to research theory and methodology, but without in-depth analysis and critical reflection.

Grade 4.0 (good)

Design and research papers with a solid substantive level, containing a logically justified proposal to solve the issue being studied. They present a clear line of reasoning, linking results to theory, and basic critical reflection on the research and design process. They demonstrate elements of a creative approach.

Grade 4.5 (good plus)

Design and research work of a high substantive and methodological level, presenting a comprehensive analysis of the problem and its solution. They demonstrate conscious use of research tools, good knowledge of the literature on the subject, and reliable critical reflection on the design and research process. A clear creative element and interdisciplinary approach to the issue are visible.

Grade 5.0 (very good)

Design and research work of an exceptional level, demonstrating high substantive, methodological, and analytical quality. They present clear and in-depth argumentation, referring to advanced scientific

literature and research methods. They demonstrate in-depth critical reflection on the design and research process, clearly show the interdisciplinary conditions of the issue, and are characterized by an original, creative approach.

Programme content

The primary goal is to engage students in scientific and implementation projects carried out at the Faculty. Students of the second semester of second-cycle studies have the opportunity to choose a lab whose subject best suits their interests and to familiarize themselves with the methodology of scientific research, with various methods and research tools. The lab provides the opportunity to prepare for doctoral studies and enables students to acquire the skills of conducting research.

Course topics

Research and Project Studio_1b (IAiOD) covers issues from the following areas: Architecture in healthcare: hospitals, medical facilities and others; Design for aging societies; Apartment, single-family and multi-family house. Form, Function, Technology; Architectural sustainable environment for human activity. Public and service spaces and facilities with a complex function; Protection of cultural heritage using modern measurement methods and AI tools; Technical equipment of buildings, advanced technologies and digital methods and tools in design; History of architecture and urban planning in a comparative perspective. New methodological areas and approaches; AI and digital design and research tools.

1. Discussion of the main research topics and tasks and the conditions for passing the subject. Indication of the basic literature on the subject and data sources.
2. Selection of topics, division into research and design teams. Variants for individual topics. Goals, tasks and work schedule of individual groups.
3. Theoretical classes: principles and stages of research work, scientific research methods, data sources. Analysis of the state of knowledge, defining the research problem - consultations, discussion
4. Analysis of data availability and their acquisition - consultations of challenges and research tasks. Formulating research questions and hypotheses and their verification.
5. Data acquisition, their analysis and verification of hypotheses. Research materials, methods and tools - data analysis in solving problems and making spatial decisions
6. Implementation of research tasks according to the adopted methodology.
7. Implementation of research tasks according to the adopted methodology.
8. Partial review: presentation of research materials and preliminary results
9. Consultation of research materials and results - discussion
10. Consultation of research materials and results - discussion
11. Development of the team's research results in text and graphic form
12. Development of the team's research results in text and graphic form
13. Presentation of research results.
14. Presentation of research results.
15. Summary of exercises. Submission of written reports from the conducted research.

Thematic groups (the launch of a group is related to the number of students in a given year and their interest in individual topics - the number of people necessary to launch a group is 15):

1. 3D scanning in architectural and urban design

The aim of the classes is to familiarize students of the second semester of the second cycle with the methodology of conducting inventory measurements and architectural research based on modern diagnostic and measurement instruments and to familiarize them with the methodology of conducting scientific research and the use of various research methods and to conduct independent research, expanding knowledge on topics related to the topic of the diploma thesis they already know. The topics of the studies indicated by the instructor may be of an expanding or detailing nature, allowing for a broader, individual development of a research topic than within the diploma thesis. The final study is a team study in the form specified by the instructor. The final, developed research material is presented to the group as a joint presentation requiring the ability to select and choose material. It is possible to develop joint publications and conference presentations in consultation with the instructor.

2. Acoustics in architectural and urban design

The aim of the course is to introduce students to the issue of creative solving of architectural design and research tasks in the field of acoustics using modern methods and digital analytical tools. During the classes, students will have the opportunity to familiarize themselves with the current methodology of solving problems related to the created space. An important element is the acquisition of the ability to

independently, reliably study the developed issue, conscious selection of various research methods supporting creativity on the way to obtaining a satisfactory design result supported by research procedures, as well as the acquisition of the ability to present one's achievements in the form of study studies, with the possibility of publishing them as scientific studies. Objectives: acquiring skills in acoustic design of rooms for interiors with increased acoustic requirements, improving skills in acoustic design of interiors with unqualified acoustics in accordance with the requirements of the mandatory standard PN-B-02151-4 "Building acoustics - Protection against noise in buildings", preparing to solve the tasks facing students in their diploma thesis, acquiring skills in using acoustic solutions in projects carried out as part of design subjects conducted at the faculty.

3. Architecture in healthcare

The aim of the course is to introduce students to issues related to the design of healthcare facilities. During the classes, students will be able to familiarize themselves with the detailed requirements related to the design of healthcare facilities, functional and utility issues together with elements of universal design, technical issues. In particular, emphasis will be placed on research methods in the design of healthcare facilities and in situ research on selected hospital facilities in Poland. The result will be design recommendations formulated on the basis of research (surveys, analysis of hospital documentation, study visits, inventories, interviews, observations, etc.). The research assumes the implementation of modern IT tools (AI) and statistical research (correlations, etc.). It is assumed that documentation for the hospital, a scientific article or another form of elaboration of the collected material will be prepared, on the basis of which the workshop will be credited.

4. Advanced digital methods in design

The aim of the course is to enable students to conduct their own creative explorations using modern digital tools with particular emphasis on Building Information Modeling (BIM), Geographic Information Systems (GIS), artificial intelligence and interactive visualization methods in relation to architectural and urban design. Activities are undertaken based on scientific methods, with particular emphasis on unconventional solutions to design, conceptual and presentation problems.

Teaching methods

1. Project-Based-Learning, Problem-Based-Learning
2. Panel discussions, brainstorming, case studies, research experiments, workshops, data analysis
3. eKursy (a system supporting the didactic process and distance learning)
4. In-situ field research

Bibliography

Basic:

- Aksamija A., (2021). Research Methods for the Architectural Profession
- Samuel F., Dye A., (2019). Demystifying Architectural Research Adding Value to Your Practice, RIBA
- Rajasekar, D., & Verma, R. (2013). Research methodology. Archers & Elevators Publishing House.
- Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. Journal of business research, 104, 333-339.
- Szokolay, S. (2014). Introduction to Architectural Science The Basis of Sustainable Design
- White, E. B., & Strunk, W. (2023). The elements of style. Open Road Media.
- Szokolay, S. (2014). Introduction to Architectural Science The Basis of Sustainable Design

Additional:

Due to the different nature and topics of the work conducted in each group, the literature for the course is determined on an ongoing basis by the instructor.

Breakdown of average student's workload

	Hours	ECTS
Total workload	125	5,00
Classes requiring direct contact with the teacher	60	2,50
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	65	2,50