



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Architectural Design of Residential Buildings/project 1 [S1Arch1E>PAOM1]

### Course

Field of study  
Architecture

Year/Semester  
2/3

Area of study (specialization)  
–

Profile of study  
general academic

Level of study  
first-cycle

Course offered in  
English

Form of study  
full-time

Requirements  
compulsory

### Number of hours

Lecture  
0

Laboratory classes  
0

Other  
0

Tutorials  
0

Projects/seminars  
0

### Number of credit points

7,00

### Coordinators

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### Lecturers

### Prerequisites

- Student has basic general knowledge of art, architecture and urban planning, - student knows basic methods, techniques, tools and materials used in solving simple engineering tasks in the field of architecture and urban planning, - student has a structured, theoretically grounded general knowledge covering key issues in the field of residential space design, - student has detailed knowledge of technical construction drawing necessary for presentation of architectural concepts, - the student has knowledge about development trends and the most significant new achievements in designing human dwelling environment, - the student has the knowledge necessary to understand the social, economic and legal determinants of human housing design, - The student is able to proficiently use hand drawing and architectural techniques necessary in the design process, can present a designed solid with chiaroscuro in perspective or axonometry, with the context of place marked; - The student is able to acquire information from the literature, databases and other properly selected sources, also in Polish, is able to integrate information, interpret it, draw conclusions and formulate and justify opinions, - The student is able to use information and communication technologies including artistic means appropriate for realization of tasks typical for shaping of architectural composition; - the student is able to communicate using various techniques in professional and other environments; - The student is able to prepare in Polish well documented study of design issues related to the design of small and medium types of residential buildings, - the student has the ability of self-education, - The student is able to critically analyze how

existing solutions, systems, and processes related to the design of single-family residential development function and evaluate them, - The student is able to identify and formulate the specification of practical tasks in terms of the developed conceptual design of an average single-family house, - Understanding of the necessity to broaden one's competences, readiness to cooperate within a team as part of a team. - The student understands the need for lifelong learning, is able to inspire and organize the learning process of learning of others, - The student is aware of and understands the non-technical aspects and effects of engineering activities, including their impact on the environment and the related responsibility for making decisions, - The student is able to cooperate and work in a group, taking various roles in it, the student correctly identifies and solves dilemmas related to the correct application of the existing legislation and administrative procedures, - The student is able to think and act in an entrepreneurial, creative and innovative way in searching for means of expression in preparing architectural concepts and acquiring materials that help in their realization.

## Course objective

**LECTURE** The aim of the course is to present students with different types of single-family residential houses (detached, semi-detached, terraced, atrial) used in various spatial contexts. In addition, boundary conditions and provisions of the Polish construction law regarding single-family housing will be discussed. In connection with them, design requirements and functional diagrams of individual types of houses will be presented. It will be supplemented with a presentation of contemporary trends in the design of low-intensity buildings. An additional goal is to get acquainted with the students' opinions on the discussed issues and problems of contemporary architecture. **DESIGN CLASSES** - development of the ability to analyze places in the urban planning and architectural scale, - acquiring the ability to properly shape the projections (functions) and form of the building, - expanding the knowledge and skills of making conceptual drawings (plans, sections, effective) in comparison with construction information, - development of the ability to graphically present an architectural concept (plans, sections, elevations), - development of freehand drawing skills for design solutions differentiation, - development of constructing mock-ups (working and target models), - practical application of theoretical knowledge learned during the lectures. **LABORATORY CLASSES** - learning the principles of making technical drawings as a basic component of the construction and detailed design; - learning the principles of room and building inventory, and reflecting existing state in the technical documentation; - learning about the form of technical documentation; - applying the principles of technical drawing that you have learned to your work; - getting to know the binding rules of preparing lists of individual elements of the building, with particular consideration of those made by the Architect; - recalling knowledge regarding building materials; - increased knowledge of the connections between different materials; - applying practical knowledge of finishing materials.

## Course-related learning outcomes

Knowledge:

Student knows and understands:

A.W1. architectural design for the implementation of simple tasks, in particular: simple facilities taking into account the basic needs of users, single- and multi-family housing, service facilities in residential complexes, public facilities in an open landscape or in an urban environment;

A.W3. records of local spatial development plans to the extent necessary for architectural design;

A.W4. principles of universal design, including the idea of designing spaces and buildings accessible to all users, in particular for people with disabilities, in architecture, urban planning and spatial planning, and ergonomic principles, including ergonomic parameters necessary to ensure full functionality of the designed space and facilities for all users, especially for people with disabilities

Skills:

Student can:

A.U1. design an architectural object by creating and transforming space so as to give it new value - in accordance with a given program that takes into account the requirements and needs of all users;

A.U4. make a critical analysis of the conditions, including the valorization of the land development and building conditions;

A.U5. think and act creatively, using the workshop skills necessary to maintain and expand the ability to implement artistic concepts in architectural and urban design;

A.U6. integrate information obtained from various sources, formulate their interpretation and critical analysis;

A.U7. communicate using various techniques and tools in a professional environment appropriate for architectural and urban design;

- A.U8. prepare architectural and construction documentation in appropriate scales in relation to the conceptual architectural design;
- A.U9. implement the principles and guidelines of universal design in architecture, urban planning and spatial planning.

Social competences:

Student is capable of:

- A.S1. independent thinking to solve simple design problems;
- A.S2. taking responsibility for shaping the natural environment and cultural landscape, including the preservation of the heritage of the region, country and Europe.

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

#### LECTURE

Written final pass a subject on the knowledge provided during the lectures and contained in the given literature (eKursy.put.poznan.pl), with particular emphasis on functional and formal issues of the apartment and selected issues in the field of ergonomics and interior design. Knowledge of contemporary trends in apartment architecture will also be required. The test consists of 20 questions, each worth 1 point.

Grading scale:

- 0-10 points - 2.0
- 11-12 points - 3.0
- 14-15 points - 3.5
- 16-17 points - 4.0
- 18-19 points - 4.5
- 20 points - 5.0

Lecture:

Formative assessment:

periodic control of learning progress, active participation in classes

Accepted grading scale: 2,0; 3,0; 3,5; 4,0; 4,5; 5,0.

Percentage of grades: 0–50% - 2.0 (insufficient); 50-60% - 3.0 (sufficient); 60-70% - 3.5 (sufficient plus); 70-80% - 4.0 (good); 80-90% - 4.5 (good plus); 90-100% - 5.0 (very good).

Summative assessment:

a final test or (if an exam is included in the curriculum) a written exam

Accepted grading scale: 2,0; 3,0; 3,5; 4,0; 4,5; 5,0.

Percentage of grades: 0–50% - 2.0 (insufficient); 50-60% - 3.0 (sufficient); 60-70% - 3.5 (sufficient plus); 70-80% - 4.0 (good); 80-90% - 4.5 (good plus); 90-100% - 5.0 (very good).

#### DESIGN / LABORATORY CLASSES

Important evaluation criteria are:

- Knowledge of the functional assumptions necessary to develop a single-family residential building concept;
- ability to critically perceive and analyze the surroundings of the designed object and to draw conclusions being the basis and one of the guidelines in shaping the architectural form,
- method of shaping the architectural composition based on the principles derived from theoretical studies;
- quality of functional-spatial solutions;
- connection of the functional-spatial system with the built and natural environment,
- quality of shaping the architectural composition,
- quality of technical representation of the spatial composition in the form of flat layouts (plans, sections, views, etc.), axonometric sketches and perspectives,
- way of using basic tools and materials helpful in presentation of achieved solutions of architectural composition,
- functionality, efficiency and profitability of applied technologies, sanitary installations and building materials,
- technical correctness and energy efficiency of the adopted design solutions,
- quality of technical reproduction of the spatial composition in the form of mock-ups,
- quality of the presentation of the design solutions in the form of composed/designed boards,
- aesthetics and legibility of the design solutions presentation.

Assessments include:

- completeness and coherence of the work in the analytical, design and descriptive parts, graphic quality of the project,

- adopted design and functional-spatial solutions,
- relationship of the designed building with the built and/or natural environment,
- relations between public, semi-private and private space,
- the way of satisfying the psycho-physical and social needs of the resident (house user),
- innovation of formal and functional solutions,
- proper solution of technical issues in the building,
- aesthetics and legibility of the graphic and descriptive part and the model (project)

Formative Assessment:

- The advancement of design work and technical knowledge are evaluated on an ongoing basis during subsequent exercises in the form specified by the instructor,
- Partial reviews, including individual project tasks, checking the progress of the student's work, presented on the group and in front of other lecturers, joint discussion, brainstorming,
- verification of knowledge of building regulations on the design of single-family houses
- assessment of knowledge and skills affects the semester grade,
- the adopted grading scale: 2,0; 3,0; 3,5; 4,0; 4,5; 5,0.

Summative Assessment:

- Final review, including the final project task, which is a summary of the knowledge and skills acquired in the course of previous projects (tasks), a presentation in the group or at a collective review in the presence of other instructors;
- a condition for passing the course is obtaining positive grades from all reviews,
- The adopted grading scale: 2,0; 3,0; 3,5; 4,0; 4,5; 5,0.

Formative assessment:

- evaluation of the drawing tasks (design classes)
- evaluation from the colloquium (lectures)

Summative Evaluation:

- evaluation obtained during the written colloquium (lecture),
- evaluation of the completed project work (classes)

The adopted grading scale: 2,0; 3,0; 3,5; 4,0; 4,5; 5,0.

Successful completion of the module depends on the student's achievement of all learning outcomes specified in the syllabus.

## Programme content

### I. LECTURE

The lectures refer to architectural design of single-family homes in terms of form, function, construction in a historical, urban and social context. The lecture series addresses aspects of sustainable development which present the relationship between architecture and technology discussed in terms of energy-efficient passive house and green building. The classes provide a starting point for design and laboratory exercises.

### II. DESIGN CLASSES

The design exercise includes the development of a conceptual design of a single-family residential building based on the guidelines and information received from the teacher: investor profile, plot, etc.

The exact "Content and Deadline Structure of the Course" is presented at the beginning of the semester and is published on PUT eKursy platform (a system for supporting the teaching process and distance learning).

The course is divided into three stages:

- STAGE I OF THE PROJECT - ANALYTICAL AND FUNCTIONAL DEVELOPMENT (hand-drawn or computer-generated): Students perform a pre-design study, including a specific series of analyses, sketch-photo inventory, analysis of the LLUP / LDD records, functional program, etc.
- STAGE II OF THE PROJECT - DEVELOPMENT OF THE CONCEPT (hand-drawn or computer-generated): The concept should include graphic elaboration (site plan, plans, sections, elevations, working mock-ups) and descriptive elaboration (including technical description, general and characteristic data, etc.).
- STAGE III PROJECT - DEVELOPMENT OF GRAPHIC PRESENTATION OF THE PROJECT: Design Project Documentation.
- PROJECT REVIEW AND CREDIT (in the last week of the semester).

Each stage ends with a sub-review. The scope of reviews is defined in "The Content and Deadline Structure of the Course".

### III. LABORATORY CLASSES

- STAGE I - TYPICAL SECTION AND PARTIAL FLOORPLAN: Typical section illustrating the vertical communication solution with relevant part of the plan (GF + FF) containing the stairs and at least one external wall, including the elements discussed in class. Drawing at a scale of 1:100 on an A3 sheet with titleblock and a key.
- STAGE II - SITE PLAN: Drawing at a scale of 1:500 with base map underlay on A3 sheet with titleblock, aschedule of accommodation and a key. Drawing based on the concept developed at the design classes. In the case of an open concept, the maximum outline allowed by the LLUP or LDD based on the analyses carried out.
- STAGE III - TECHNICAL DRAWINGS BASED ON THE APPROVED CONCEPT FROM THE DESIGN CLASS IN RELATIVE SCALE: Paper drawings folded to A4, binded together with a description to be submitted at the final review and/or defence during the last class. Each stage concludes with a sub-review. The scope of the reviews is set out in the Content and Term Structure.

## Course topics

### I. LECTURE

- Lecture 1. History of the house - idea, function, relations with the environment, meaning. Overview from ancient times (Greek oikos and Roman villa) to 2000.
- Lecture 2. Three ideal villas - a case study of shaping the architecture of a house in relation to the place and the inhabitants
- Lecture 3. Place of home - relations between home and place; the concept of genius loci in relation to a private house
- Lecture 4. Plot development project - components of a site plan according to building law; types of single-family housing, boundary conditions specified in planning documents
- Lecture 5. Dialogue with tradition - a multiplicity of attitudes; contemporary references to universal and local tradition
- Lecture 6. House in public space - architecture of a private house in relation to public space, gradation of house space
- Lecture 7. Home security - methods of protection against natural, systemic, criminal, and construction hazards
- Lecture 8. Kinetic houses - mobile elements of private house architecture
- Lecture 9. The disintegration of the form of the house - new means of expression: free form, the autonomy of elements and parts of the house
- Lecture 10. House for objects - complementary functions in the house: from cabinets of curiosities to private art galleries, libraries, and exhibition rooms
- Lecture 11. Sustainable house - Architecture of houses: energy-saving and passive houses, earthships and natural houses; the relationship between architecture and technology
- Lecture 12. Home for the elderly: function, form, and construction of a home for the elderly and disabled
- Lecture 13. I live in a house in my head - individual functionalism: from function personalization to the concept of not-home
- Lecture 14. Summary - trends in the development of contemporary house architecture

### II. DESIGN CLASSES

- 1. Site selection from the materials provided.
- 2. Analytical studies performed individually or in groups.
- 3. Colloquium on building regulations for the design of single-family houses - Regulation Of The Minister Of Infrastructure Of 12 April 2002 On Technical Conditions, Which Should Correspond To The Buildings And Their Location.
- 4. Mid-term review.
- 5. Development of a concept from the scope of land development design, floorplans, sections, elevations.
- 6. Development of presentation panels.
- 7. Final review carried out jointly for several groups.

### III. LABORATORY CLASSES

- 1. Introductory class. Discussion of the content and time structure and tasks for the next classes.
- 2. Building components - external, internal, load-bearing, partitions. Development of basic elements to be used in drawings.
- 3. Window and door joinery symbols including dimensioning and annotation.

4. Zone stamps and a basic schedule of accommodation according to PN-ISO 9836:2015.
5. Solution for vertical communication (determination of the type of staircase considering the height of the room and the ceiling layer; to be performed also in case the house designed on the design classes by the students is a single-storey building).
- 6-7. Solution of foundation and layers of the external wall corresponding to the material assumptions in the concept. Solution for the connection of the external wall to the roof, taking into account the method of its drainage.
8. Setting out of the single-family house taking into account planning guidelines, applicable regulations.
9. Setting out the Floor Reference Level in relation to the shape of the building plot. Adjustment of communication (stairs, ramps, terraces, gates, wickets), parking spaces and basic development elements (solid waste collection area, possible junction boxes).
- 10-11. Dimensioning, annotations of Site Plan drawing. Basic balance taking into account planning guidelines.
- 12-14. Development of drawings in the standard of architectural and construction design (according to the regulation) of a single-family house on the basis of the concept developed in the design classes. Plans, cross-section, elevations using the elements developed in Stage I. Technical description including basic structural assumptions, materials and area statement based on the adopted programme.
15. Final review

## Teaching methods

1. Lecture with a multimedia presentation with elements of conversation.
2. Exercises have the character of individual consultations conducted in a student group. Discussion and correction of solutions applied in the project with the participation of all students, discussion of special cases of recurrent design problems.
3. Project method / case study (sample study) - discussing different ways of solving project problems
4. PUT eKursy platform (a system for supporting the teaching process and distance learning).

## Bibliography

Basic:

- Adamczewska-Wejchert H., Kształtowanie zespołów mieszkaniowych, Arkady, Warszawa 1985 + nowe wyd
- Adamczewska-Wejchert H. , Domy atrialne, Arkady, Warszawa
- Basista A., Betonowe dziedzictwo
- Berek R., Architektura środowiska mieszkaniowego tworzonego z udziałem środków publicznych (wyd. drugie), Wydawnictwo Politechniki Poznańskiej, Poznań 2009.
- Dąbrowska –Milewska G., Zabudowa mieszkaniowa w kształtowaniu przestrzeni miasta.
- Grandjean Etienne – Ergonomia mieszkania
- Korzeniewski W. (1989) –Budownictwo mieszkaniowe poradnik projektanta, Arkady, Warszawa 1989
- Korzeniewski W. (2011) – Projektowanie mieszkań, Wydawnictwo POLCEN, Warszawa 2011
- Korzeniewski W. Warunki techniczne dla budynków i ich usytuowanie-poradnik z komentarzem , (wydanie 8 i późniejsze) PolCen , Warszawa 2009.
- Pallado J., Architektura wielorodzinnych domów dostępnych.
- Rozbicka M., Małe mieszkanie z ogrodem w tle, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2007.
- (red.) Gałęziowski J., Odbudowa polskiego miasteczka, Kraków 1916, reprint Wydawnictwo Górnolésie, Lublin 2007
- Peters P., Rosner R. Małe zespoły mieszkaniowe , Arkady, Warszawa.
- Włodarczyk J. A. –Życie znaczy mieszkać, PWN, warszawa-Kraków 1997
- "Architectural Design of Residential Buildings 1" course on eKursy (PUT e-learning platform).
- Bell Jonathan, 21st Century House, wyd. Laurence King, Londyn, 2006.
- Chueca Pilar, Today's city houses, wyd. Structure, Barcelona, 2006.
- Davies Colin, Key houses of the twentieth century, wyd. Laurence King Publishing, Londyn, 2006.
- Melhuish Clare, Modern house 2, wyd. Phaidon, Londyn, 2000.
- Ernst and Peter Neufert, Architects' Data, 3rd Edition (or later), Blackwell Science
- Markiewicz P., Budownictwo ogólne dla architektów, Archi-Plus, Arkady 2011;
- Żeńcykowski W. Budownictwo ogólne 2/1, Arkady , Warszawa

- Żeńczykowski W. Budownictwo ogólne 2/2, Arkady , Warszawa
- Żeńczykowski W. Budownictwo ogólne 3/1, Arkady , Warszawa
- Żeńczykowski W. Budownictwo ogólne 3/2, Arkady , Warszawa
- Architektura mieszkaniowa i usługowa w programach nauczania. T. 1 / red. Ewa Pruszevicz-Sipińska (WA) - Poznań, Polska : Wydawnictwo Politechniki Poznańskiej, 2011
- Architektura mieszkaniowa i usługowa w programach nauczania. T. 2 / red. Ewa Pruszevicz-Sipińska (WA) - Poznań, Polska : Wydawnictwo Politechniki Poznańskiej, 2012
- Legislation:
- Rozporządzenie Ministra Infrastruktury z dnia 12 kwietnia 2002r w sprawie warunków technicznych, jakim powinny odpowiadać budynki i ich usytuowanie (z późniejszymi zmianami.)
- Rozporządzenie Ministra Rozwoju z dnia 11 września 2020 r. w sprawie szczegółowego zakresu i formy projektu budowlanego (z późniejszymi zmianami).
- Ustawa z dnia 7 lipca 1994 r. Prawo budowlane.
- "Building Law" course on eKursy (PUT e-learning platform) with translation of relevant legal acts.
- PN-B-01025:2004 Rysunek budowlany Oznaczenia graficzne na rysunkach architektoniczno-budowlanych [Construction drawings - Graphical designations on architectural and construction drawings]
- PN-B-01027:2002 Rysunek budowlany. Oznaczenia graficzne stosowane w projektach zagospodarowania działki lub terenu [Construction drawings - Graphical designations for the landscape drawing practice]
- PN-B-01029:2000 Rysunek budowlany. Zasady wymiarowania na rysunkach techniczno-budowlanych [Construction drawings -- Principle of dimension on architectural drawings]
- PN-B-01030:2000 Rysunek budowlany. Oznaczenia graficzne materiałów budowlanych [Building and civil engineering drawings - Graphical symbols of building materials]
- PN-B-01040:1994 Rysunek konstrukcyjny budowlany. Zasady ogólne. [Construction drawing for building - General principles]
  
- Additional:
- Ghel J., Życie między budynkami. Użytkowanie przestrzeni publicznych, Wydawnictwo RAM, Kraków 2009.
- Wejchert K., Elementy kompozycji urbanistycznej, Arkady, Warszawa.
- Żórawski J., O budowie formy architektonicznej, Arkady, Warszawa 1962.
- Rasmunssen S.E., Odczuwanie architektury, Wyd. Murator, Warszawa 1999.
- Renomowane krajowe i zagraniczne periodyki, czasopisma architektoniczne, urbanistyczne, Zeszyty Naukowe Politechniki Poznańskiej seria: „Architektura i Urbanistyka i Architektura Wnętrz”, itp.
- Giedion Siegfried, Przestrzeń, czas, architektura. Narodziny nowej tradycji, tłum. J. Olkiewicz, PWN, Warszawa, 1968.
- Jencks Charles, Architektura postmodernistyczna. tłum. B. Gadomska, Arkady, Warszawa, 1987.
- Riley Terrence, The Un-Private House, The Museum of Modern Art, Nowy York, 1999
- Edward Allen and Joseph Iano, Fundamentals of Building Construction - Materials and Methods, 5th Edition, Wiley
- Andrea Deplazes, "Constructing Architecture: Materials, Processes, Structures", Birkhäuser Basel
- PN-N-01603:1986 Rysunek techniczny- Składanie formatów arkuszy [Technical drawings - Folding of sheets]
- PN-N-01614:1982 Rysunek techniczny- Wymiarowanie- Zasady ogólne [Technical drawings - Dimensioning - General principles]
- PN-ISO 7518:2011 Rysunek techniczny - Rysunki budowlane - Uproszczone przedstawianie rozbiórki i przebudowy [Technical drawings - Construction drawings - Simplified representation of demolition and rebuilding]
- PN-ISO 9699:2003 Właściwości użytkowe w budownictwie [Performance standards in building - Checklist for briefing - Contents of brief for building design]
- PN-ISO 9836:2015 Właściwości użytkowe w budownictwie. Określanie i obliczanie wskaźników powierzchniowych i kubaturowych [Performance standards in building - Definition and calculation of area and space indicators]
- Transformation of the Chinese Village – Tradition and Modernity / Adam Siniński (WA) // W: Defining the Architectural Space – Tradition and Modernity in Architecture. vol. 5 / red. Tomasz Kozłowski - Wrocław, Polska : Oficyna Wydawnicza ATUT - Wrocławskie Wydawnictwo Oświatowe, 2019 - s. 73-82
- Detal ogrodzenia w projektowaniu domów jednorodzinnych / Adam Siniński (WA) // W: Architektura mieszkaniowa i usługowa w programach nauczania. T. 2 / red. Ewa Pruszevicz-Sipińska (WA) - Poznań, Polska : Wydawnictwo Politechniki Poznańskiej, 2012 - s. 129-136

## Breakdown of average student's workload

	Hours	ECTS
Total workload	175	7,00
Classes requiring direct contact with the teacher	105	4,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	70	3,00