



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Civil Engineering 4

Course

Field of study

Year/Semester

Architecture

II / 5

Area of study (specialization)

Profile of study

Architecture

general academic

Level of study

Course offered in

First-cycle studies

English

Form of study

Requirements

full-time

compulsory

Number of hours

Lecture

Laboratory classes

Other (e.g. online)

0

0

0

Tutorials

Projects/seminars

0

30

Number of credit points

2

Lecturers

Responsible for the course/lecturer:

dr inż. arch. Adam Sieniecki

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Wydział Architektury

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Responsible for the course/lecturer:

mgr inż. Katarzyna Starzecka

dr inż. arch. Jacek Gałkowski

dr inż. arch. Adam Sieniecki

mgr inż. arch. Jędrzej Suchecki

mgr inż. arch. Piotr Springer

mgr inż. arch. Jędrzej Suchecki

Prerequisites

The student has well-ordered, theoretically grounded general knowledge covering key issues in the field of general construction, material science and principles of preparing a design for of single-family building construction project.

Students have detailed knowledge related to the scope and form of the construction project of a of single-family building in architectural and construction branch.

Students know the basic methods, techniques, tools and materials used in the preparation of the technical documentation of a single-family building.

Student knows and understands the general principles of copyright law.



The student is able to acquire information from literature, databases and other properly selected sources, also in English, he is able to integrate information, interpret it and draw conclusions and formulate and justify opinions in the field of general construction, material science and construction technology typical for single-family houses.

The student is able to prepare and present in English a technical documentation of the building including single-family house.

The student has self-directed learning skills.

Students are able to use hand drawing (and computer) techniques appropriate for drafting a technical documentation for a single-family building.

The student is able to use analytical methods to design elements of a single-family building (e.g. estimate the overall dimensions of the structure, calculate thermal insulation of building partitions).

Students can identify elements of a single-family building and formulate their specifications, in particular the technical description in accordance with the requirements for architectural and construction projects.

The student is able to assess the suitability of routine methods and tools for preparing a technical documentation of a single-family building and to select and apply the appropriate method and tools.

The student is able - according to the given traditional technology and on the basis of any technology and on the basis of any architectural conception - prepare a technical documentation of a single-family building.

Course objective

Design classes objectives:

- getting to know forms and scopes of particular phases of design process in the context of the Act Construction Law;
- knowing the principles of preparing a technical documentation for a multi-family residential building;
- apply learned principles about multi-family residential buildings design to the work performed;
- perfecting the ability to prepare lists of individual building elements in multi-family building with special attention to those prepared by the Architect;
- learning about traditional building technologies in design practice,
- develop existing students knowledge of building materials.

Course-related learning outcomes

Knowledge

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;



Skills

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.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;

Social competences

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:

An important evaluation criterion is to check:

- knowledge of technical drawing principles necessary to prepare architectural-technical documentation for a multi-family house, including principles of representation of architectural form, description and dimensioning of documentation elements, use of graphic designations, principles of technical writing;
- knowledge of multi-family building elements, their nomenclature, principles of shaping and design;
- knowledge of modern building technologies and materials, their properties and scope of application in multi-family housing construction;
- knowledge of the form and scope of the technical documentation;
- ability to represent the spatial form of a multi-family building in flat drawings (plans, sections, elevations, etc.), axonometry;
- the ability to use drafting tools and materials and the ability to apply freehand drawing techniques;
- the ability to choose the correct size of the worksheet and the correct placement of content;
- the ability to describe and dimension technical drawings using technical writing;
- the ability to assemble technical drawings;
- technical correctness and energy efficiency of the adopted design solutions;
- ability to prepare technical documentation legibly and aesthetically.

Formative assessment:

- The progress of design works and technical knowledge are assessed on an ongoing basis during subsequent classes in the form specified by teacher.
- Evaluation of drawing tasks.

Summative Evaluation:



- The assessment of knowledge and skills affects the semestral grade.
- The evaluation of the completed project work.
- A prerequisite for passing the course is obtaining positive grades from all reviews and correct completion of the project within the specified time.

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

Design classes content:

Design exercises in the field of developing technical documentation for a multi-family building with underground garage hall and services on the ground floor, according to a concept provided by the teacher, prepared by students individually according to consultations and instructions of the teacher, handwritten in 2H pencil on paper to be redrawn in ink on tracing paper or in CAD software.

Class #1: Getting the students acquainted with the subject matter of the classes, reminding them about the scope of the construction design in relation to the Regulation of the Minister of Infrastructure of July 3, 2003 on the detailed scope and form of the construction design (Dz. U. z dnia 10 lipca 2003 r.) and principles of technical drawing according to valid standards - markings, dimensioning, lines. Discussion of traditional multi-family building technologies. Learn the main guidelines and principles of preparing technical documentation for a multi-family residential building through an e-learning course available on the university's eMoodle platform.

Class #2: Selection of wall and floor technology and foundation method. Choosing of basic structural solutions for the previously developed concept of a multi-family building and adjustment of its dimensional parameters to the requirements of the adopted technologies. Redraw concept with architectural details omitted including spans and ceiling support directions. Schematic projections at 1:50 scale in pencil on paper with structural axes marked.

Class #3: Concretization of the construction scheme for the building, corrections of the trusses and ceilings, definition of technology for chimney ducts (gravitational ventilation only), selection of source of thermal energy, selection of technology for window and door lintels. PlansC in scale 1:50 in pencil on paper with marking of installation risers and location of central heating and hot water supply.

Class #4: Recalling the principles of dimensioning door and window openings in relation to the dimensions of carpentry, discussion of the issues of sanitary installations in multi-family buildings and the principles their routing, explanation of the principles of designing and drawing staircases and passenger lifts in multi-family buildings as well as acoustic insulation issues and basic fire protection concepts.

Class #5: Drawing of "empty" building openings in structural walls, as well as stairs and flue pipes, determination of foundation level and height parameters of floors, as well as ground level in relation to



surrounding terrain. Plans and schematic cross-section at 1:50 scale in pencil on paper indicating stairs, columns, lintels and stringers.

Class #6: Drawing of window and door joinery on projections and sections, discussion of rules of estimating dimensions and describing construction elements, selection of dimensions of rafter framing, floor, beams, lintels and columns. Projections and a schematic cross-section on a scale of 1:50 in pencil on paper with labels of construction elements.

Class #7: Discussion of the principles of foundation of multi-family buildings, selection of water insulation technology, selection of foundation dimensions for structural elements, stairs, heavy chimneys. Plans and schematic cross-section in scale 1:50 in pencil on paper with layout of foundations.

Class #8: Drawing elements of architectural arrangement - partition walls, balustrades, room descriptions. Plan and schematic cross-section in scale 1:50 on paper with layout rooms.

Class #9: Drawing of built-in and movable elements of architectural arrangement of rooms - sanitary ware, built-in appliances, closets, furniture, vehicles. Discuss the principles of internal dimensioning of projections. Plans and a schematic cross-section at a scale of 1:50 in pencil on paper with room arrangements and internal dimension lines.

Class #10: Discussion of the principles of architectural façade design, types of sandwich walls and selection of technology supplier and workshop design, problems of thermal protection of buildings, energy efficiency issues. Projections and schematic cross-section in the scale 1:50 pencil on paper with consideration of facade finishing technology.

Class #11: Drawing the land development elements on the ground plan, basement and upper floors - exits, driveways, terrain stairs, paving, bands, terraces, balconies, canopies. Discussion of the principles of external dimensioning of buildings, projections and schematic cross-section at a scale of 1:50 in pencil on paper with the nearest land development and external dimension lines.

Class #12: Drawing a plan of the roof, flat roof, discussing practical problems of draining rainwater and snow from the building and the principles of designing rainwater drainage system of the building. Finished projections and schematic cross-section at 1:50 scale in pencil on paper with projection of developed roof. Class #13-14: Consultation and verification of completion of drawing assignment.

Class #13: Discussion of the principles of section and elevation drawing - vertical dimensioning building, elements of descriptions and designations. Discussion of the scope and form of technical description. Finished projections, cross-sections and elevations in scale 1:50 in pencil on paper, ready to redraw in ink on tracing paper, technical description in A-4 format.

Class #14: Discussion of the scope and form of the land development project (site plan), drawing building on the map for design purposes, issues of land development and principles of dimensioning. Plan of the land development (site plan) on the map for design purposes in the scale 1:500 with the elements of the utilities and dimensioning and description of land development.

Class #15: Completion of the project work, credit of the semester.



Teaching methods

- Classes based on the use of various sources of knowledge (film, photographs, archival materials, source texts, documents, statistical yearbooks, maps, Internet, etc.).
- Project method / case study (sample study) - discussing different ways to solve design problems - collisions at the interface of architecture, construction and technical installations in the building.
- eLearning Moodle (a system for supporting the teaching process and distance learning).

Bibliography

Basic

1. Markiewicz P., Budownictwo ogólne dla architektów, Archi-Plus, Arkady 2011;
2. Żeńczykowski W.. Budownictwo ogólne 2/1, Arkady , Warszawa
3. Żeńczykowski W.. Budownictwo ogólne 2/2, Arkady , Warszawa
4. Żeńczykowski W.. Budownictwo ogólne 3/1, Arkady , Warszawa
5. Żeńczykowski W.. Budownictwo ogólne 3/2, Arkady , Warszawa
6. E-script for the course "Civil Engineering 3".

Legislation:

7. Rozporządzenie Ministra Infrastruktury w sprawie szczegółowego zakresu i formy projektu budowlanego tekst ujednoczony (D.U. Nr 228 poz. 1513 z 2008 r.)
8. Rozporządzenie Ministra Infrastruktury w sprawie warunków techniczne, jakim powinny odpowiadać budynki i ich usytuowanie - tekst ujednoczony (Dz. U. Nr 239, poz. 1597 z 2010 r.)
9. PN-EN ISO 3098-0:2002 Dokumentacja techniczna wyrobu. Pismo. Część 0: Zasady ogólne.
10. PN-B-01025:2004 Rysunek budowlany. Oznaczenia graficzne na rysunkach architektonicznobudowlanych. (Zamiast PN-70/B-01025)
11. PN-B-01030:2000 Rysunek budowlany. Oznaczenia graficzne materiałów budowlanych. (łącznie z normą PNISO 4069:1999 zamiast PN-70/B-01030)
12. PN-B-01029:2000 Rysunek budowlany. Zasady wymiarowania na rysunkach architektonicznobudowlanych. (Zamiast PN-60/B-01029)
13. PN-ISO 129:1996 i PN-ISO 129/Ak Rysunek techniczny. Wymiarowanie. Zasady ogólne. Definicje. Metody wykonania i oznaczenia specjalne. (Zamiast PN-82/N-01614 w zakresie zasad porządkowych, sposobów wymiarowania i uproszczeń wymiarowych)

Additional

14. Neufert E., Podręcznik projektowania architektonicznego, Arkady 1996.
15. praca zbiorowa, Poradnik majstra budowlanego, Arkady 1992.
16. Drouet Z., Kędziński S., Znormalizowane oznaczenia na rysunkach, Wydawnictwa normalizacyjne "Alfa" 1985.
17. PN-EN ISO 3098-3:2002 Dokumentacja techniczna wyrobu. Pismo. Część 3: Alfabet grecki.
18. PN-EN ISO 3098-4:2002 Dokumentacja techniczna wyrobu. Pismo. Część 4: Znaki diakrytyczne i specjalne alfabetu łaćńskiego.



19. PN-EN ISO 5455:1998 Rysunek techniczny. Podziałki.
20. PN-ISO 8560:1994 i PN-ISO 8560:1994/Ap1:1999 Rysunek techniczny. Rysunki budowlane. Przedstawianie modularnych wymiarów, linii i siatek.
21. Katalogi i informacje techniczne producentów materiałów budowlanych i dostawców technologii budowlanych.
22. Ustawa z dnia 7.07.1994r. Prawo budowlane wraz z późniejszymi zmianami.
23. PN-EN ISO 3098-2:2002 Dokumentacja techniczna wyrobu. Pismo. Część 2: Alfabet łaciński, cyfry i znaki.
24. PN-EN ISO 4157-1:2001 Rysunek budowlany. Systemy oznaczeń. Część 1: Budynki i części budynków.
25. PN-EN ISO 4157-2:2001 Rysunek budowlany. Systemy oznaczeń. Część 2: Nazwy i numery pomieszczeń.
26. PN-EN ISO 7519:1999 Rysunek techniczny. Rysunki budowlane. Ogólne zasady przedstawiania na rysunkach zestawieniowych.
27. PN-EN ISO 128-20:2002 Rysunek techniczny – Zasady ogólne przedstawiania – Część 20: Wymagania podstawowe dotyczące linii. (Zamiast PN-82/N-01616) 5
28. PN-EN ISO 128-23:2002 Rysunek techniczny – Zasady ogólne przedstawiania – Część 23: Linie na rysunkach budowlanych.
29. PN-ISO 4069:1999 Rysunek budowlany. Oznaczanie powierzchni na przekrojach i widokach. Zasady ogólne.
30. PN-ISO 9431:1994 Rysunek budowlany. Części arkusza rysunkowego przeznaczone na rysunek, tekst i tabliczkę tytułową.
31. PN-ISO 7200:1994 Rysunek techniczny. Tabliczki tytułowe.
32. PN-80/N-01612 Rysunek techniczny. Formaty arkuszy.
33. PN-86/N-01603 Rysunek techniczny. Składanie formatów arkuszy.

Breakdown of average student's workload

	Hours	ECTS
Total workload	60	2,0
Classes requiring direct contact with the teacher	30	1,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) ¹	30	1,0

¹ delete or add other activities as appropriate